> Avaya Networking Licensing Guide

Avaya Networking

Document Date: July 2012

Document Number: NN48500-540

Document Version: 7.0

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Abstract

This document serves as a guide to software feature licensing on Avaya Networking products.

Revision Control

No	Date	Version	Revised By	Remarks
1	Apr 30th 2007	1.0	ESE	Final Version for 1st Release Internally.
2	Feb 20th 2008	2.0	ESE	Revised Content and Formatting
3	July15th 2008	3.0	PLM	Updated to include new ERS8300 & ERS8600 licenses.
4	Dec 15th 2008	4.0	PLM	Minor corrections and updates to ERS licenses.
5	Jun 24th 2009	5.0	PLM	Updates to ERS5000, ERS8300 and ERS8600 licensed features, and removal of VSS5000.
6	April 5th 2011	6.0	PLM/PRMGT	Updates to ERS8300, 8600/8800, addition of VSP9000. Enterprise Device Manager support on ERS 2500, 4500, and 8600/8800.
7	April 11th 2011	6.1	PLM/PRMGT	Added Unified Branch.
8	May 20th 2011	6.2	PRMGT	Minor corrections and updates
9	Aug 24th 2011	6.3	PLM	Updates and corrections to stackable ERS.
10	July 12th 2012	7.0	PLM	Addition to overview section, Identity Engines, VPS section, updates to ERS4000/5000, VSP9000 and COM.

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Conventions

This section describes the text, image, and command conventions used in this document.

Symbols

Tip – Highlights a configuration or technical tip.

Note – Highlights important information to the reader.

Warning – Highlights important information about an action that may result in equipment damage, configuration or data loss.

Text

Bold text indicates emphasis.

Italic text in a Courier New font indicates text the user must enter or select in a menu item, button or command:

```
ERS5520-48T# show running-config
```

Output examples from Avaya devices are displayed in a Lucida Console font:

```
ERS5520-48T# show sys-info

Operation Mode:          Switch
MAC Address:             00-12-83-93-B0-00
PoE Module FW:           6370.4
Reset Count:             83
Last Reset Type:         Management Factory Reset
Power Status:            Primary Power
Autotopology:            Enabled
Pluggable Port 45:       None
Pluggable Port 46:       None
Pluggable Port 47:       None
Pluggable Port 48:       None
Base Unit Selection:     Non-base unit using rear-panel switch
sysDescr:                Ethernet Routing Switch 5520-48T-PWR
                         HW:02       FW:6.0.0.10  SW:v6.2.0.009
                         Mfg Date:12042004    HW Dev:H/W rev.02
```

1. Overview

This document serves as a guide to acquiring and installing licenses on Avaya Converged Data Networking products. For each product covered in this guide the following information will be provided:

1. Base licenses included with the purchase of each product.
2. Features that require additional licensing.
3. License keying and methodology.
4. The process to acquire and install a License Authorization Code.
5. The process to acquire demonstration or evaluation licenses.

Additionally, Section 7 provides an overview of the http://www.avayadatalicensing.com web site and describes the process for creating and managing a license bank.

1.1 Data switching license framework

Avaya data switching products use a 3-tier license framework that delivers base functionality features with more complex and advanced features segmented into license levels above the base license. These three license levels are:

- Base Software License
- Advanced License
- Premier License

A Base Software License is required with every new switch or chassis. Avaya ERS2500, 4000, 5000 and VSP7000 provide the Base Software License free of charge. A Base Software License Kit must be purchased with every new chassis based switch; ERS8300, ERS8600/8800 and VSP9000. Base Software is not keyed and does not require use of a license file to unlock base features.

Advanced and Premier License Kits are purchased separately if features in those tiers are required, and are in addition to the Base Software License Kit. The associated license will unlock features for that level in the software release being used. A Premier License unlocks ALL licensed features, including Advanced features on the switch. An upgrade license from Advanced to Premier is not available.

License / Product	Base	Stacking	Advanced	Premier
ERS2500	Base features included with purchase minus licensed options (free)	Stacking (per switch) ($195)		
ERS4000	Base features included with purchase minus licensed options (free)		OSPF, VRRP, ECMP.	
ERS5500	Base features included with purchase minus licensed options (free)		SMLT, OSPF, ECMP, PIM-SM, VRRP.	
ERS5600	Base features included with purchase minus licensed options (free)		SMLT, OSPF, ECMP, PIM-SSM, VRRP, IPv6 Routing, BGP4.	Advanced Features plus: VRF-Lite.
ERS8300	Base features included with purchase minus licensed options ($50)		SMLT, RSMLT, OSPF, ECMP, iBGP-Lite, SLPP, VRRP, PIM, Deep Packet Filtering.	Advanced Features plus: VRF-Lite.
ERS8600/ ERS8800	Base features included with purchase minus licensed options ($5220)		BGP4 (>10 peers), MSDP, BFD, PCAP, IPv6 Routing (IPv6 over SMLT/RSMLT, DHCPv6 relay, RADIUSv6, VRRPv3, BGP+).	Advanced Features plus: VRF-Lite, MCast Virtualization for VRF-Lite, MP-BGP, IP-VPN-Lite (IPinIP), IP-VPN MPLS RFC2547, SPB Features (L2 &L3).
VSP9000	Base features included with purchase minus licensed options ($5220)		BGP4 (16 BGP peers / 64k IP Routes), IP Remote monitoring, *≤4K VLANs*, PCAP, IPv6 Routing.	Advanced Features plus: VRF, 500k IP Routes data plane / 1.5M ctrl plane, 256 BGP peers, *≤16K VLANs*, SPB L2 VSNs, SPB L3 VSNs, SPB Inter-ISID Routing, IP Shortcuts.

1.2 Avaya Networking products

The following Avaya products are addressed in this document (refer to section links in the figures below):

Note that the Ethernet Routing Switch 3500 series in the Stackable Ethernet switching portfolio does not yet contain any licensed features and therefore is not listed within this document.

Access Control Portfolio	
Identity Engines	**VPN Gateway**
Section 2.1	Section 2.2

Figure 1.1 – Access Control Portfolio

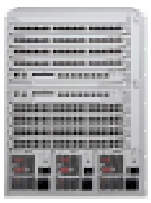
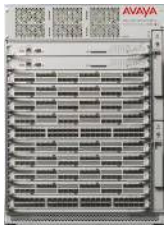
Stackable Ethernet Switching Portfolio			
Ethernet Routing Switch 2500 Series	**Ethernet Routing Switch 4000 Series**	**Ethernet Routing Switch 5000 Series**	**Virtual Services Platform 7000**
Section 3.1	Section 3.2	Section 3.3	COMING SOON
Modular Ethernet Switching Portfolio			
Ethernet Routing Switch 8300	**Ethernet Routing Switch 8600/8800**	**Virtual Services Platform 9000**	
			
Section 3.4	Section 3.5	Section 3.6	

Figure 1.2 – Ethernet Switching Portfolio

Unified Branch Portfolio				
Advanced Gateway 2330	**Secure Router 1X00**	**Secure Router 2330**	**Secure Router 3120**	**Secure Router 4134**
Section 4.1	Section 4.2	Section 4.3	Section 4.2	Section 4.3

Figure 1.3 – Unified Branch Portfolio

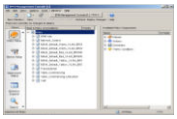
Unified Communications Management Portfolio				
Configuration and Orchestration Manager (COM)	**Visualization Performance and Fault Manager (VPFM)**	**IP Flow Manager (IPFM)**	**Enterprise Policy Manager (EPM)**	**Visualization Provisioning Service (VPS)**
				
Section 5.1	Section 5.2	Section 5.3	Section 5.4	Section 5.5

Figure 1.4 – Unified Communications Management Portfolio

Wireless LAN Portfolio			
Wireless LAN 2300 Infrastructure	**Wireless LAN 2300 Management**	**Wireless LAN 8100 Infrastructure**	**Wireless LAN 8100 Management**
Section 6.1.1	Section 6.1.2	Section 6.2.1	Section 6.2.2

Figure 1.5 – Wireless LAN Portfolio

2. Access Control

2.1 Identify Engines Portfolio

Avaya Identity Engines Portfolio solutions enable businesses to control who accesses a network, when, where, and how the network is accessed, and which devices will be allowed on the network. The Identity Engines portfolio is standards-based, vendor-agnostic, scalable, easy to use and cost effective. It integrates into your current infrastructure supporting heterogeneous networks and delivering investment protection.

2.1.1 Ignition Server

The Avaya Identity Engines Ignition Server is delivered pre-installed with its Operating System RHEL as a Virtual Appliance and is the main component of the Avaya Identify Engines portfolio, providing a centralized policy-decision point across all access methods while also supporting federated identity across all major directories in the marketplace. The Ignition Server is offered as an Open Virtualization Format (OVF) virtual image for VMware that allows customers to deploy the Ignition Server on a virtualization platform of their choice.

The Ignition Server license is also known as Base license (FEATURE_BASE) and it comes in three sizes:

- LARGE - License for any number of Authenticators.
- SMALL - License for up to 20 Authenticators.
- LITE - License for up to 5 Authenticators (only as part of the Wireless Starter Kit bundle).

An Authenticator is a network device such as Ethernet Switch, Wireless LAN Controller, VPN Gateway. An Authenticator is any device that will do RADIUS authentication against the Ignition Server or against an HA-pair of Ignition Server. Note that s stack of ERS switches are considered as one Authenticator.

The Ignition Server is offered as follows:

- Standalone license Ignition Server SMALL or Ignition Server LARGE.
- Bronze Bundle – two Ignition Servers SMALL Virtual Appliances for an HA deployment.
- Silver Bundle -- two Ignition Servers LARGE Virtual Appliances for HA deployment and Guest Manager.
- Gold Bundle -- two Ignition Servers LARGE Virtual Appliances for HA deployment, Ignition Guest Manager and Ignition Analytics for reporting.
- Wireless Starter Kit Bundle – one Ignition Server LITE Virtual Appliance and Guest Manager.

Ignition Server as Standalone

Table 2.1.1-1 provides the standalone licenses available for the Ignition Server:

Order Code	Description
EB1639193	Avaya Identity Engines Ignition Server LARGE. Virtual Appliance Software for VMware ESXi. Licensed for unrestricted number of Authenticators.
EB1639194	Avaya Identity Engines Ignition Server SMALL. Virtual Appliance Software for VMware ESXi. Licensed for up to 20 Authenticators.

Table 2.1.1-1 – Ignition Server Standalone License Kits

Ignition Server in an Identity Engines Bundle

Table 2.1.1-2 provides the bundle licenses available for the Ignition Server:

Order Code	Description
EB1639232	Bronze Bundle -- Avaya Identity Engines Ignition Server SMALL in HA configuration (20 authenticators).
EB1639233	Silver Bundle -- Avaya Identity Engines Ignition Server LARGE in HA configuration (Unlimited Authenticators) and Guest manager.
EB1639234	Gold Bundle – Avaya Identity Engines Ignition Server LARGE in HA configuration (Unlimited Authenticators), Guest Manager and Analytics.
EB1639235	Avaya Identity Engines Wireless Guest Management Starter Kit (includes 1 x Ignition Server LITE Virtual Appliance and Ignition Guest Manager).

Table 2.1.1-2 – Ignition Server Bundle License Kits

Ignition Server in an Identity Engines and WLAN 8100 Bundle

Table 2.1.1-3 provides the bundle licenses available for the Ignition Server:

Order Code	Description
EB1639A29E5	Enterprise & Guest Access LITE. IDEngines Guest manager and 1xIgnition Server licensed for 5 Authenticators. WLAN Controller 2x10GigE & 12x10/100/1000 Base-T & 12xGigE ports licensed for 16 APs expandable to 64 APs. No Power Cord.
EB1639E29E5	Enterprise & Guest Access LITE. IDEngines Guest manager and 1xIgnition Server licensed for 5 Authenticators. WLAN Controller 2x10GigE & 12x10/100/1000 Base-T & 12xGigE ports licensed for 16 APs expandable to 64 APs. NA Power Cord.
EB1639A30E5	Enterprise & Guest Access SMALL. IDEngines Guest Manager and 1xIgnition Server licensed for 20 Authenticators. WLAN Controller 2x10GigE & 12x10/100/1000 Base-T & 12xGigE ports licensed for 64 APs (expandable). No Power Cord.

EB1639E30E5	Enterprise & Guest Access SMALL. IDEngines Guest Manager and 1xIgnition Server licensed for 20 Authenticators. WLAN Controller - 2x10GigE & 12x10/100/1000 Base-T & 12xGigE ports licensed for 64 APs (expandable). NA Power Cord.
EB1639A31E5	Enterprise & Guest Access LARGE. IDEngines Guest Manager, 1xIgnition Server unrestricted Authenticators license and Ignition Analytics. WLAN Controller 2x10GigE & 12x10/100/1000 Base-T & 12xGigE ports licensed for 64 APs (expandable). No Power Cord.
EB1639E31E5	Enterprise & Guest Access LARGE. IDEngines Guest Manager, 1xIgnition Server unrestricted Authenticators license and Ignition Analytics. WLAN Controller 2x10GigE & 12x10/100/1000 Base-T & 12xGigE ports licensed for 64 APs (expandable). NA Power Cord.

Table 2.1.1-3 – Ignition Server and WLAN 8100 Bundle License Kits

2.1.2 Ignition Analytics

The Avaya Ignition Analytics server is an optional server that presents the Ignition Server's network authorization and authentication information in a variety of summary and detail reports in the areas of audit, compliance, security and usage. Installed on a separate Windows XP workstation (32bit), Windows 2003 (32bit) server or Windows 2008 server (32bit), Analytics provides enterprises with a powerful reporting application with over 25 preconfigured audit, compliance and usage reports.

Table 2.1.2 provides the license order codes for the Avaya Ignition Analytics server:

Order Code	Description
EB1639196	Avaya Identity Engines Ignition Analytics. Windows Application Software.

Table 2.1.2 – Analytics License Kits

2.1.3 Ignition Guest Manager

The Avaya Ignition Guest Manager is an optional server for managing wired and wireless guest user accounts. Installed on a separate Windows XP workstation (32bit), Windows 2003 server (32bit or 64 bit) or Windows 2008 server (32bit or 64bit), Guest Manager provides non IT staff with an easy to use web-based interface for creating and managing guest user accounts with specific policies and restrictions applied under 10 seconds. This provides enterprises with an easy to deploy guest user management solution for wired and wireless networks without requiring dedicated front-desk personnel or IT intervention.

The Ignition Guest Manager can be added to existing Ignition Server deployments or is also offered as part of a Wireless Starter Kit, Bronze, Silver and Gold bundle. In addition, Guest Manager is offered as part of each of the Identity Engines WLAN 8100 Bundles.

Table 2.1.3 provides the license order codes for the Avaya Ignition Guest Manager server:

Order Code	Description
EB1639195	Avaya Identity Engines Ignition Guest Manager. Windows Application Software.

Table 2.1.3 – Guest Manager License

2.1.4 TACACS+ Integration Module

The TACACS+ Integration Module is optional and can be purchased to enable TACACS+ policies on the Avaya Ignition Server. TACACS+ policies allow the Ignition Server to function as the TACACS+ Server (policy decision point) that permits or denies administrator access to network infrastructure devices on the network.

The TACACS+ capability is an enabled feature of the Ignition Server by applying the appropriate license on the Ignition Server.

Table 2.1.4 provides the license order codes for the TACACS+ Integration Module:

Order Code	Description
EB1639197	Avaya Identity Engines TACACS+ License.

Table 2.1.4 – TACACS+ Integration Module Licenses

2.1.5 Microsoft NAP Integration Module

The Microsoft NAP (Network Access Protection) Integration Module is optional and can be purchased to allow the Avaya Ignition Server to provide health assessment of Microsoft Windows workstations with the Microsoft NAP client before the devices are permitted access to the network so that the appropriate access level is granted. For each authentication the Ignition Server can perform posture checking to validate the end-points are running the required security software and update configuration before being permitted access to the network. Compliant devices can be provided full access while non-compliant devices can be remediated.

The Microsoft NAP Integration Module can be added to existing Ignition Server deployments and is offered in SMALL and LARGE versions. The SMALL license is intended for the *Avaya Identity Engines 7.0 and 8.0 Ignition Server SMALL Virtual Appliance* while the LARGE license is intended for the *Avaya Identity Engines 7.0 and 8.0 Ignition Server LARGE Virtual Appliance*.

The MS-NAP capability is an enabled feature of the Ignition Server by applying the appropriate license on the Ignition Server.

Table 2.1.5 provides the license order codes for the Microsoft NAP Integration Module:

Order Code	Description
EB1639236	Avaya Identity Engines Posture with MS-NAP for Ignition Server LARGE.
EB1639237	Avaya Identity Engines Posture with MS-NAP for Ignition Server SMALL.

Table 2.1.5 – Microsoft NAP Integration Module Licenses

2.1.6 Ignition Access Portal and CASE Wizard

The Ignition Access Portal is an optional server is delivered pre-installed with its Operating System FreeBSD as a Virtual Appliance. The Ignition Access Portal is offered as an Open Virtualization Format (OVF) virtual image for VMware that allows customers to deploy it on a virtualization platform of their choice.

The Ignition Access Portal acts as a captive portal and provides the ability to authenticate and provide access to user devices that do not have 802.1x capability or have not been configured for 802.1x based access. In addition, the Access Portal performs device profiling to allow for applying policies based on both user and device properties This can be applied for users who are employees with corporate devices, an employee with a personal tablet device, or a guest user with a Smartphone or other device. The Access Portal enables on-boarding and controlled access of BYOD.

The Ignition CASE Administration is provided at no additional cost when the Ignition Access Portal is purchased. The Ignition CASE Wizard is delivered as a Windows Application that needs to be installed on a separate Windows XP workstation (32bit), Windows 2003 server (32bit or 64 bit) or Windows 2008 server (32bit or 64bit). The CASE Administration may be installed on same server as the Ignition Guest Manager server without any conflicts.

The Ignition CASE Wizard is meant to provide Client Access to the Secure Enterprise. It is a transient client that automates configuration of managed (employee devices) and unmanaged (business partner or guest devices) Window devices to provide access to the network. The CASE Wizard configures for both wired and wireless secure access for both 802.1x and MS-NAP.

Table 2.1.6 provides the license order codes for Ignition Access Portal and CASE Wizard

Order Code	Description
EB1639241	Avaya Identity Engines Access Portal for LARGE Ignition Server. Includes CASE Wizard and CASE Administration console.
EB1639242	Avaya Identity Engines Access Portal for SMALL Ignition Server. Includes CASE Wizard and CASE Administration console.

Table 2.1.6 – Ignition Access Portal and CASE Wizard Licenses

2.1.7 Order Fulfillment

When a customer places an order, they will receive a set of DVDs along with a License Authorization Code (LAC) paper sheet for each of the Identity Engines components. The following table summarizes what is being shipped for each of the order codes.

Table 2.1.7 provides the license order codes for Ignition Access Portal and CASE Wizard

Order Code	Description	Ship
EB1639193	Ignition Server LARGE	DVDs + 1 x LAC
EB1639194	Ignition Server SMALL	DVDs + 1 x LAC
EB1639232	Bronze Bundle → includes Ignition Server SMALL HA	DVDs + 2 x LACs
EB1639233	Silver Bundle → includes Ignition Server LARGE HA and Guest Manager	DVDs + 3 x LACs
EB1639234	Gold Bundle → includes Ignition Server LARGE HA, Guest Manager and Analytics	DVDs + 4 x LACs
EB1639235	Wireless Guest Management Starter Kit → includes Ignition Server LITE and Guest Manager	DVDs + 2 x LACs
EB1639A29E5	Enterprise & Guest Access LITE → includes Ignition Server LITE, Guest Manager and WLAN Controller licensed for 16 APs. No Power Cord.	DVDs + 2 x LACs
EB1639E29E5	Enterprise & Guest Access LITE → includes Ignition Server LITE, Guest Manager and WLAN Controller licensed for 16 APs. NA Power Cord.	DVDs + 2 x LACs
EB1639A30E5	Enterprise & Guest Access SMALL → includes Ignition Server SMALL, Guest Manager and WLAN Controller licensed for 64 APs. No Power Cord.	DVDs + 2 x LACs
EB1639E30E5	Enterprise & Guest Access SMALL → includes Ignition Server SMALL, Guest Manager and WLAN Controller licensed for 64 APs. NA Power Cord.	DVDs + 2 x LACs
EB1639A31E5	Enterprise & Guest Access LARGE → Ignition Server LARGE, Guest Manager, Analytics and WLAN Controller licensed for 64 APs. No Pwr Cord.	DVDs + 3 x LACs
EB1639E31E5	Enterprise & Guest Access LARGE → Ignition Server LARGE, Guest Manager, Analytics and WLAN Controller licensed for 64 APs. NA Pwr Cord.	DVDs + 3 x LACs
EB1639196	Ignition Analytics	1 x LAC
EB1639195	Ignition Guest Manager	1 x LAC
EB1639197	Ignition TACACS+	1 x LAC
EB1639236	Ignition Posture with MS-NAP for Ignition Server LARGE	1 x LAC
EB1639237	Ignition Posture with MS-NAP for Ignition Server SMALL	1 x LAC
EB1639241	Ignition Access Portal for Ignition Server LARGE. Includes CASE Wizard	1 x LAC
EB1639242	Ignition Access Portal for Ignition Server SMALL includes CASE Wizard	1 x LAC

Table 2.1.7 – Identity Engines Order Fulfillment

2.1.8 License Keying and Methodology

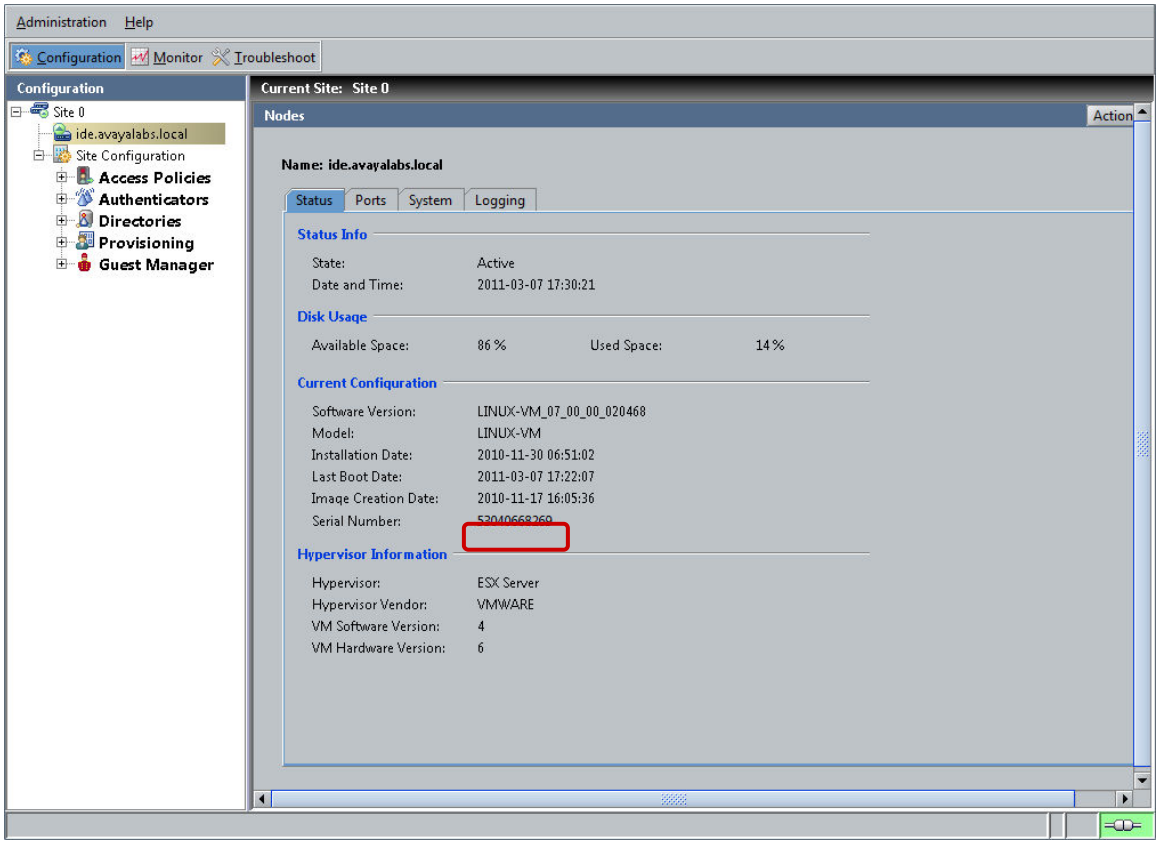
Licenses are tied to the Ignition Server Serial Number in the case of a standalone deployment or to both Ignition Server Serial Numbers in the case of an HA deployment. The Serial Number is a unique identification of each Ignition Server installation. The Ignition Server license is also known as Base License.

The installed licenses determine how many authenticators the Ignition Server supports as well as which modules are enabled.

No licenses need to be installed on the external Windows XP workstation, Windows 2003 server or Windows 2008 servers running the Ignition Guest Manager, but a license key is required to activate the Ignition Analytics Server.

The Serial Number for an Ignition Server can be obtained with the Ignition Dashboard application using the following procedure:

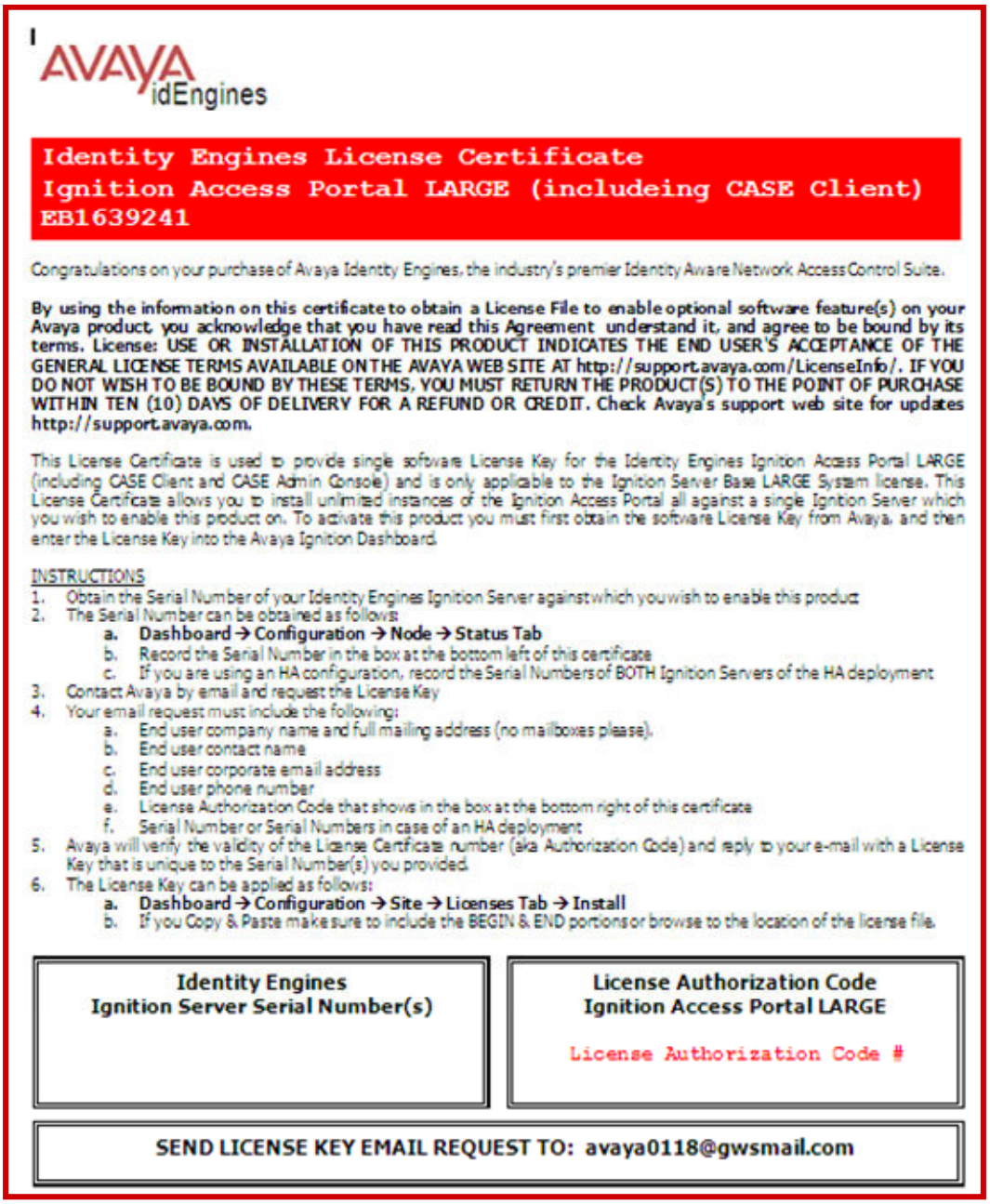
***Ignition Dashboard → Configuration → Ignition-Server-Name → Status* Tab**



2.1.9 License Acquisition

When a customer places an order, they will receive a set of DVDs along with a License Authorization Code (LAC) for each of the Identity Engines components.

The figure below shows a typical License Certificate with LAC that is included in a shipment:



AVAYA idEngines

Identity Engines License Certificate
Ignition Access Portal LARGE (includeing CASE Client)
EB1639241

Congratulations on your purchase of Avaya Identity Engines, the industry's premier Identity Aware Network Access Control Suite.

By using the information on this certificate to obtain a License File to enable optional software feature(s) on your Avaya product, you acknowledge that you have read this Agreement understand it, and agree to be bound by its terms. License: USE OR INSTALLATION OF THIS PRODUCT INDICATES THE END USER'S ACCEPTANCE OF THE GENERAL LICENSE TERMS AVAILABLE ON THE AVAYA WEB SITE AT http://support.avaya.com/LicenseInfo/. IF YOU DO NOT WISH TO BE BOUND BY THESE TERMS, YOU MUST RETURN THE PRODUCT(S) TO THE POINT OF PURCHASE WITHIN TEN (10) DAYS OF DELIVERY FOR A REFUND OR CREDIT. Check Avaya's support web site for updates http://support.avaya.com.

This License Certificate is used to provide single software License Key for the Identity Engines Ignition Access Portal LARGE (including CASE Client and CASE Admin Console) and is only applicable to the Ignition Server Base LARGE System license. This License Certificate allows you to install unlimited instances of the Ignition Access Portal all against a single Ignition Server which you wish to enable this product on. To activate this product you must first obtain the software License Key from Avaya, and then enter the License Key into the Avaya Ignition Dashboard.

INSTRUCTIONS

1. Obtain the Serial Number of your Identity Engines Ignition Server against which you wish to enable this product
2. The Serial Number can be obtained as follows:
   a. **Dashboard → Configuration → Node → Status Tab**
   b. Record the Serial Number in the box at the bottom left of this certificate
   c. If you are using an HA configuration, record the Serial Numbers of BOTH Ignition Servers of the HA deployment
3. Contact Avaya by email and request the License Key
4. Your email request must include the following:
   a. End user company name and full mailing address (no mailboxes please).
   b. End user contact name
   c. End user corporate email address
   d. End user phone number
   e. License Authorization Code that shows in the box at the bottom right of this certificate
   f. Serial Number or Serial Numbers in case of an HA deployment
5. Avaya will verify the validity of the License Certificate number (aka Authorization Code) and reply to your e-mail with a License Key that is unique to the Serial Number(s) you provided.
6. The License Key can be applied as follows:
   a. **Dashboard → Configuration → Site → Licenses Tab → Install**
   b. If you Copy & Paste make sure to include the BEGIN & END portions or browse to the location of the license file.

Identity Engines Ignition Server Serial Number(s)	**License Authorization Code Ignition Access Portal LARGE**
	License Authorization Code #

SEND LICENSE KEY EMAIL REQUEST TO: avaya0118@gwsmail.com

Avaya Ignition Server license keys can be obtained for an individual virtual appliance using the instructions provided on the LAC paper:

INSTRUCTIONS

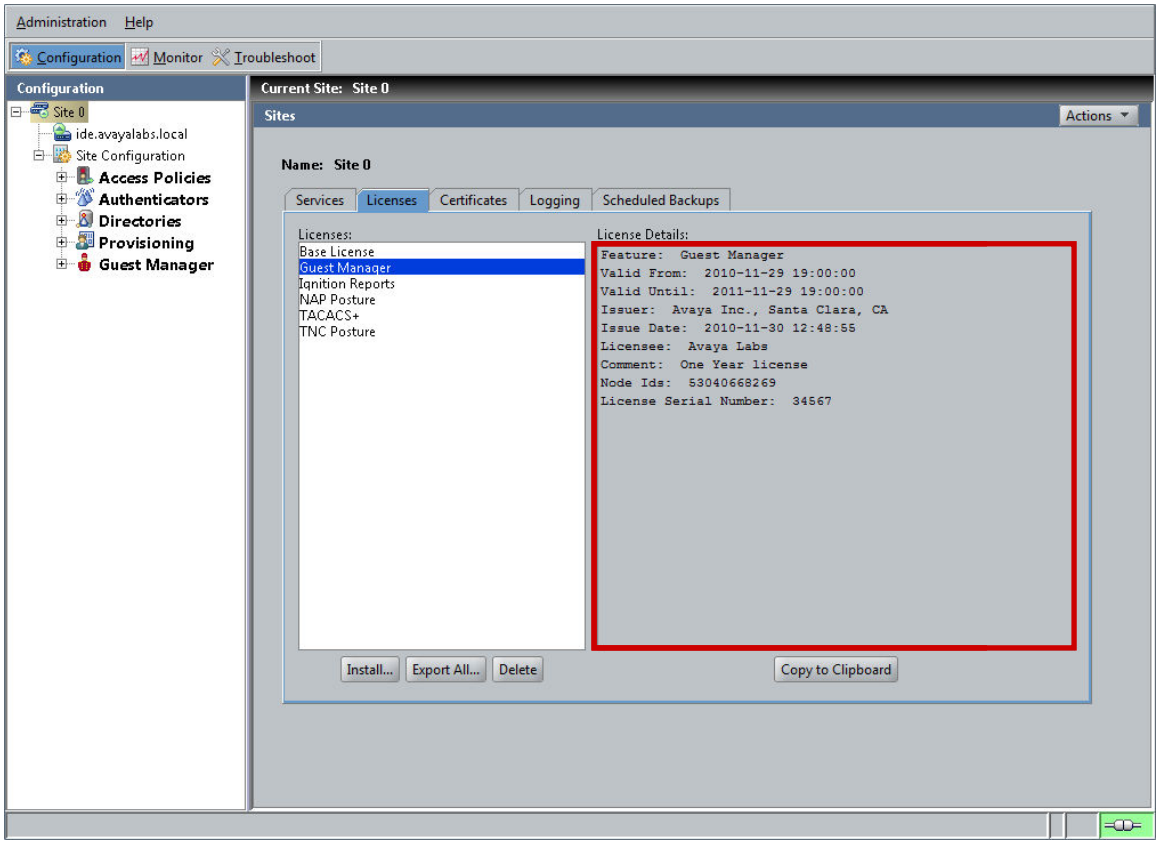
1. Obtain the Serial Number of your Identity Engines Ignition Server against which you wish to enable this product
2. The Serial Number can be obtained as follows:
    a. Dashboard → Configuration → Node → Status Tab
    b. Record the Serial Number in the box at the bottom left of this certificate
    c. If you are using an HA configuration, record the Serial Numbers of BOTH Ignition Servers of the HA deployment
3. Contact Avaya by email and request for the License Key
4. Your email request must include the following:
    a. End user company name and full mailing address (no mailboxes please).
    b. End user contact name
    c. End user corporate email address
    d. End user phone number
    e. License Authorization Code that shows in the box at the bottom right of this certificate
    f. Serial Number or Serial Numbers in case of an HA deployment
    g. The request should be sent to avaya0118@gwsmail.com
5. Avaya will verify the validity of the License Certificate number (aka Authorization Code) and reply to your e-mail with a License Key that is unique to the Serial Number(s) you provided.
6. The License Key can be applied as follows:
    a. Dashboard → Configuration -> Site → Licenses Tab → Install
    b. If you Copy & Paste make sure to include the BEGIN & END portions or browse to the location of the license file.

REMEMBER -- when acquiring licensing for high availability virtual appliances, you ***MUST*** provide ***BOTH*** serial appliance numbers at the same time. Failure to do so will require a support case to be opened with Avaya Global Support Services (GSS) in order to obtain the HA licenses and will take a few days to resolve.

2.1.10 Ignition Server License Installation

A license file may be installed on the Ignition Server using the Ignition Dashboard by performing the following procedure:

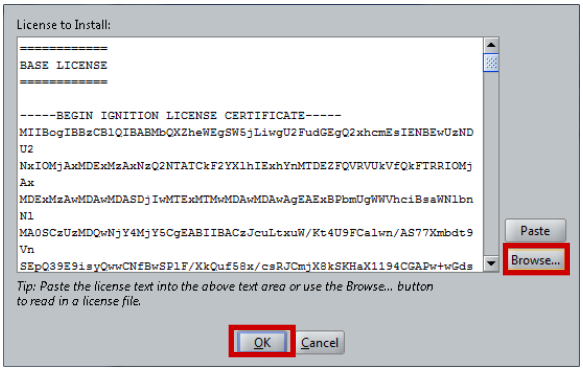
1 Within the *Ignition Dashboard* select *Configuration* > *Site-Name* > *Licenses*:

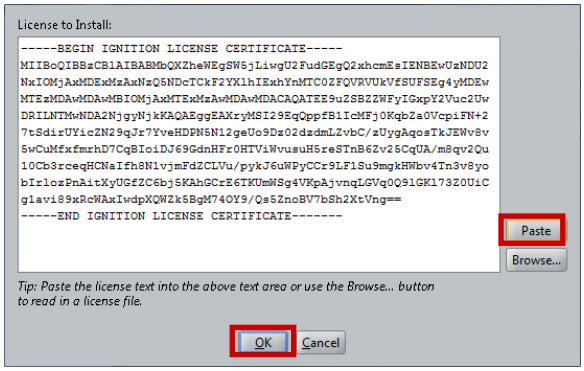


2 To install a *Base License* or *Guest Manager License* on the Ignition Server:

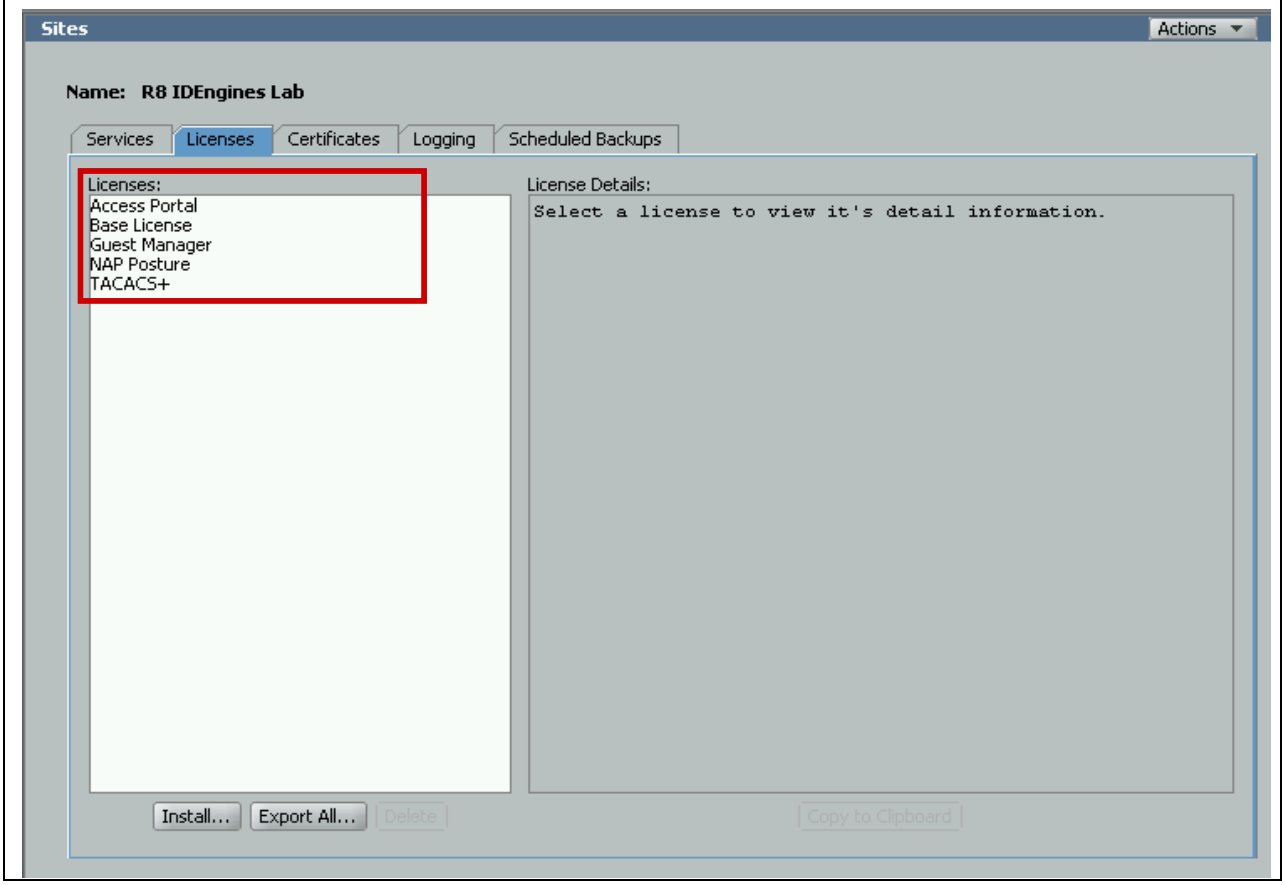
1) **Select *Browse* and select the path and filename of the license file to install. This will install all the evaluation or purchased licenses at one time.**
2) **Alternatively copy the license key to the Windows clipboard then select *Paste*. This will install one evaluation or purchased license at a time.**

Click *OK* when completed:





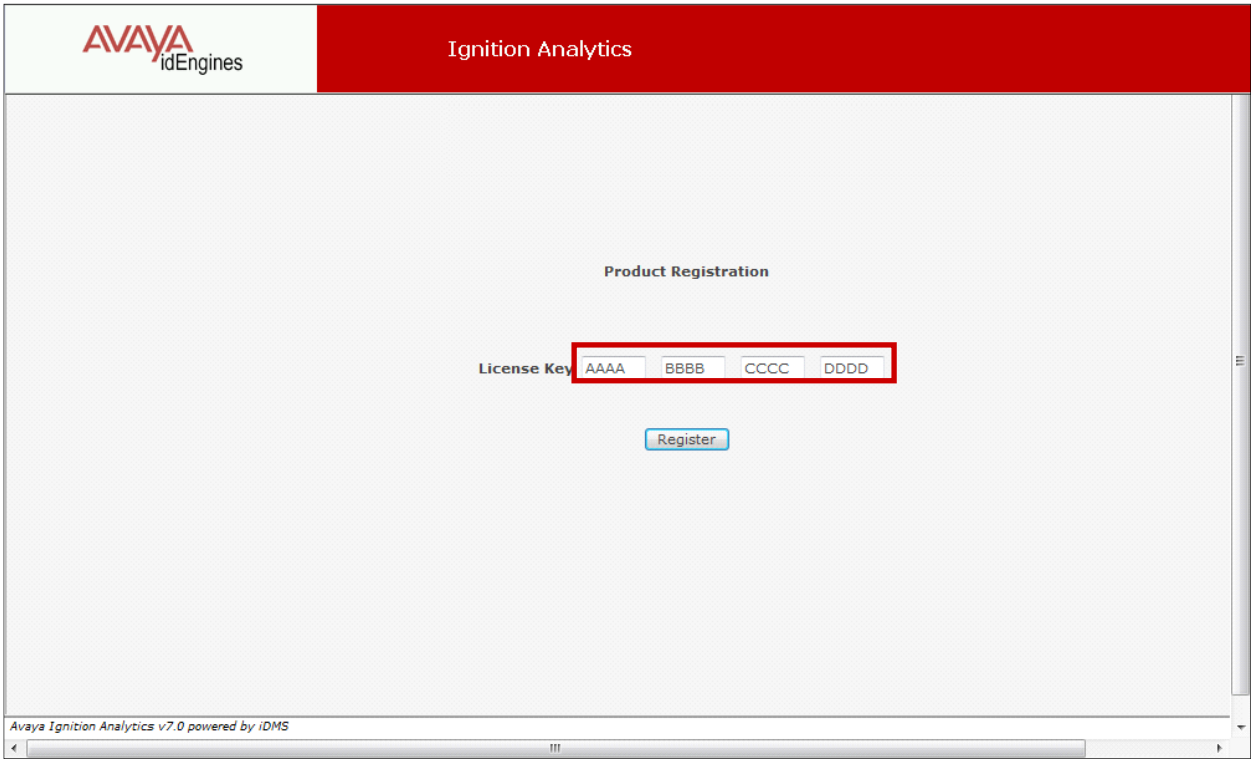
3 The list of installed licenses will be displayed:



2.1.11 Ignition Analytics Server License Installation

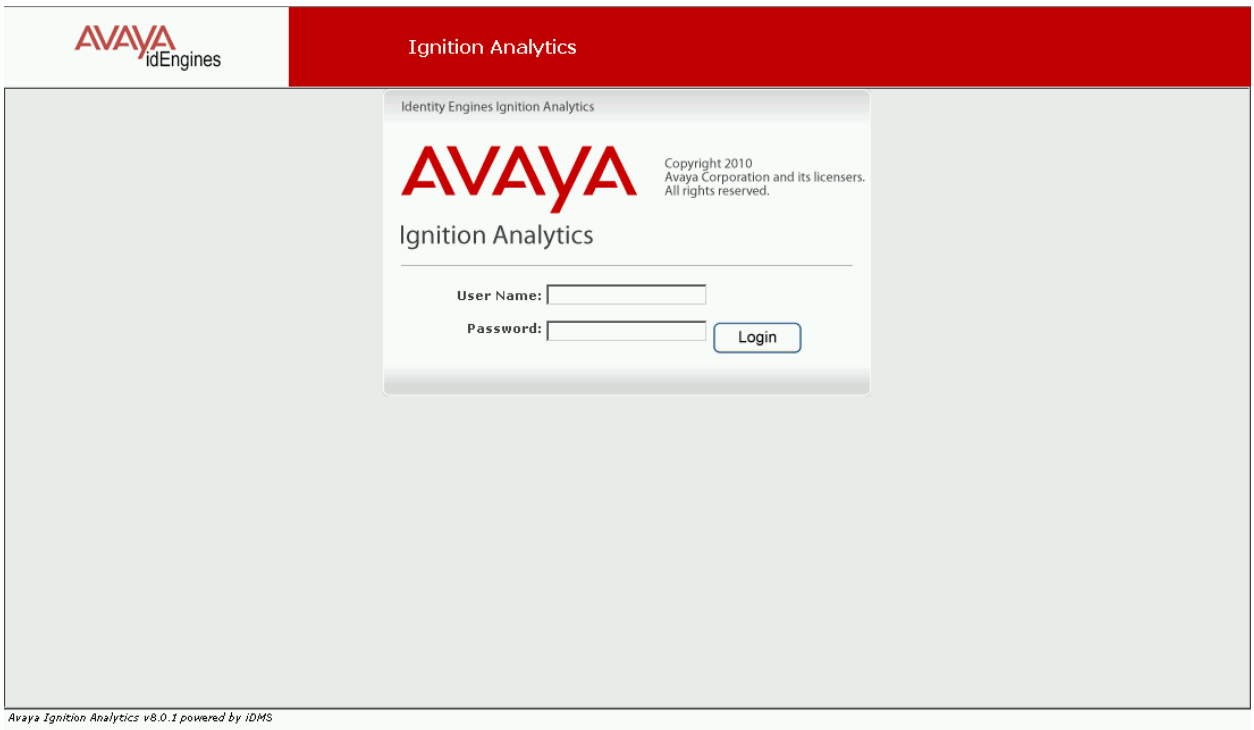
A license file may be installed on the Ignition Analytics Server using a Web Browser by performing the following procedure:

1	**Open the web browser on the Windows XP workstation, Windows 2003 server or Windows 2008 server where the Ignition Analytics service is installed and go to the URL http://localhost:8080/IA. If using a remote system open a web browser and enter the URL http://server-ip:8080/IA where *<server-ip>* is the IP address or hostname assigned to server. When prompted enter the *License Key* then select Register:**



	The Ignition Analytics server must have connection to the Internet in order to active and license the product. Make sure there are no firewall rules that will block the Ignition Server. After licensing/activation of the Ignition Server – there is no further need for Internet connectivity. A server without Internet access will be able to access the application for up to 15 days.

2 If the license key registration is successful, a login window will be displayed:



2.1.12 FAQs

- What if customer wants high availability?
  - Must have 2 x Ignition Servers of same size
  - Either through BRONZE, SILVER or GOLD bundles
  - Or by purchasing quantity 2 x Ignition Servers

- What if customer wants posture?
  - Must purchase MS-NAP license to matching the Ignition Server size
  - A single license required for either HA or non-HA

- What if customer wants only guest management?
  - Purchase WLAN Guest Management Starter Kit

- Does the customer need to purchase 2 x Guest Managers in case of HA?
    - No. Once license of Guest Manager will work with an HA configuration provided that the Guest Manager license was generated based on the two Serial Numbers of the two Ignition Servers comprising the HA.
    - Same applies to Ignition Access Portal and MS-NAP in case of HA deployment

- Customer wants to deploy multiple Ignition Guest Managers – does the customer need multiple licenses for Guest Manager?
    - No. With a single license of Guest Manager customers can deploy multiple Guest Managers all against a single Standalone Ignition Server or an HA-pair of Ignition Servers

- Customer wants to deploy multiple Ignition Access Portals– does the customer need multiple licenses for Access Portal?
    - No. With a single license of Access Portal customers can deploy multiple Access portals all against a single Standalone Ignition Server or an HA-pair of Ignition Servers

2.2 VPN Gateway

The Avaya VPN Gateway portfolio is an SSL VPN remote access security solution that extends the reach of enterprise applications to remote/mobile employees, contractors, partners and customers. VPN Gateway leverages the native capability of widely deployed SSL enabled Web browsers. It also provides flexible access options including browser based, on demand and installed SSL clients, and IPsec client support. Its comprehensive set of security features protects enterprises from malware attacks and prevents loss or theft of confidential information. With high performance, high availability, and scalability features, this product ensures business continuity. As a result, the Avaya VPN Gateway offers the most flexible and cost effective secure remote access solution on the market today.

2.2.1 Base License

The VPN Gateway virtual appliances are available in 10 user and 50 user versions that includes licenses for IPsec, SSL and Secure Portable Office (SPO). One license is required for each IPsec and SSL VPN tunnel terminated by the virtual appliance.

Table 2.2.1 provides the base licenses available for the VPN Gateway virtual appliances:

Order Code	Description
EB0016025	VPN Gateway Starter Kit – 10 Users for Virtual Appliance.
EB0016026	VPN Gateway Starter Kit – 50 Users for Virtual Appliance.

Table 2.2.1 – VPN Gateway Base License Kits

2.2.2 IPsec

The VPN Gateway 3050/3070 ships with 50 IPsec licenses. Additional IPsec licenses may be purchased for the VPN Gateway 3050/3070 hardware appliances and are additive. For example purchasing a 1,000 user IPsec license will extend the total IPsec VPN license count to 1,050 concurrent users. The IPsec license is only intended for the VPN Gateway 3050/3070 hardware appliances and cannot be purchased and installed on the VPN Gateway virtual appliances.

Table 2.2.2 provides the IPsec VPN licenses available for the VPN Gateway 3050 and 3070 hardware appliances:

Order Code	Description
EB1639125	IPsec License – 250 Users.
EB1639122	IPsec License – 500 Users.
EB1639123	IPsec License – 1,000 Users.

Table 2.2.2 – IPsec License Kits

2.2.3 SSL / IPsec VPN

The VPN Gateway 3050/3070 ships with 50 SSL and 50 IPsec licenses while the Virtual Appliances ship with 10 or 50 SSL and IPsec licenses. Additional SSL VPN and IPsec licenses may be purchased for the VPN Gateway 3050 / 3070 hardware appliances and VPN Gateway virtual appliances and are additive. For example purchasing a 1,000 user SSL VPN and IPsec license will extend the total SSL VPN & IPsec VPN license count to 1,050 concurrent users.

Table 2.2.3 provides the SSL VPN and IPsec user licenses available for the VPN Gateway 3050 / 3070 hardware and the VPN Gateway virtual appliances:

Order Code	Description
EB1639096	SSL VPN and IPsec – 50 User License.
EB1639055	SSL VPN and IPsec – 100 User License.
EB1639056	SSL VPN and IPsec – 250 User License.
EB1639057	SSL VPN and IPsec – 500 User License.
EB1639064	SSL VPN and IPsec – 1,000 user license.
EB0016001	SSL VPN and IPsec – 2,000 User License.
EB0016002	SSL VPN and IPsec – 5,000 User License.

Table 2.2.3 – SSL VPN and IPsec License Kits

2.2.4 Emergency Remote Access

Emergency Remote Access licenses provide licensing for a larger number of users than normally required such as in the event of a natural disaster, pandemic or other emergency. These Emergency Remote Access licenses provide additional capacity during emergencies or events at a significant discount for up to 60 days. Once the event is over, a call to Global Avaya Support Services (GSS) is required to reset the Emergency Remote Access license so that it is available for the next emergency or event.

Table 2.2.4 provides the Emergency Remote Access licenses available for the VPN Gateway 3050/3070 hardware and the VPN Gateway virtual appliances:

Order Code	Description
EB0016010	ERA License: SSL and IPsec VPN Emergency Remote Access – 500 Users.
EB0016011	ERA License: SSL and IPsec VPN Emergency Remote Access – 1,000 Users.
EB0016012	ERA License: SSL and IPsec VPN Emergency Remote Access – 2,000 Users.
EB0016013	ERA License: SSL and IPsec VPN Emergency Remote Access – 5,000 Users.

Table 2.2.4 – Emergency Remote Access License Kits

2.2.5 Portal Guard

The Portal Guard license allows the VPN Gateway to convert existing HTTP sites to HTTPS links. The VPN Gateway will not only handle the SSL processing but also ensures that existing web links are rewritten to HTTPS eliminating the need to rewrite each HTTP link manually. The Portal Guard feature is supported on the VPN Gateway 3050 / 3070 hardware and VPN Gateway virtual appliances.

Table 2.2.5 provides the Portal Guard licenses available for the VPN Gateway 3050/3070 hardware and the VPN Gateway virtual appliances:

Order Code	Description
EB1639150	Portal Guard License.

Table 2.2.5 – Portal Guard License Kits

2.2.6 Secure Service Partitioning

The Secure Service Partitioning license provides the ability to virtualize a cluster of VPN Gateways into separate virtual private networks. This allows a cluster of VPN Gateways to support multiple end-user customers on shared hardware. The Secure Service Partitioning license can be installed on the VPN Gateway 3050/3070 hardware and VPN Gateway virtual appliances.

Table 2.2.6 provides the Secure Service Partitioning licenses available for the VPN Gateway 3050/3070 hardware and the VPN Gateway virtual appliances:

Order Code	Description
EB1639126	Secure Service Partitioning License.

Table 2.2.6 – Secure Service Partitioning License Kits

2.2.7 Secure Portable Office

Secure Portable Office feature and user licenses enables support for the USB customized VPN client on the VPN Gateway 3050 / 3070 hardware and VPN Gateway virtual appliances. Secure Portable Office licenses are included with the 10 and 50 user Starter Kits.

Table 2.2.7 provides the Secure Portable Office feature and user licenses available for the VPN Gateway 3050/3070 hardware and the VPN Gateway virtual appliances:

Order Code	Description
EB0016014	Secure Portable Office Feature License (Includes 10 User Licenses).
EB0016015	Secure Portable Office Client 100 User License.
EB0016016	Secure Portable Office Client 1,000 User License.
EB0016017	Secure Portable Office Client 5,000 User License.

Table 2.2.7 – Secure Portable Office License Kits

2.2.8 License Keying and Methodology

License keys are based on the MAC address of the VPN Gateway 3050/3070 hardware appliances and the VPN Gateway virtual appliances.

Although licenses are keyed to individual VPN Gateways, the user licenses are pooled and shared within a cluster. If all cluster units are up and running, the total license user count for SSL VPN and IPsec licenses are contributed to the global pool. If a unit fails, the license contribution from that unit will be available within the cluster for 30 days to allow for unit repair or replacement.

The MAC address or a VPN Gateway and VPN 1000 Module may be obtained using the following procedure:

Using the command line interface, issue the *info/local* command:

```
>> Main# info/local
```

```
Avaya VPN Gateway
Hardware platform: 3050-VM
Software version 8.0.5.0
Up time: 22 days 4 hours 6 minutes
IP address: 192.168.10.40
MAC address: 00:0c:29:bc:d2:3c
```

2.2.9 License Acquisition

Avaya Ignition Server license keys can be obtained for an individual VPN Gateway or VPN Gateway virtual appliances using the following procedure:

1. Forward an email to Avaya0118@gwsmail.com which includes the following information:
    a. The License Authorization Codes provided with each License Certificate.
    b. The MAC address of the VPN Gateway or VPN Gateway virtual appliance.
2. Avaya will validate the License Authorization Code(s) and will reply with an email with the License Keys for the VPN Gateway or VPN gateway virtual appliance.

2.2.10 License Installation

License keys may be installed using the command line interface or Browser Based Interface by performing one of the following procedures:

2.2.10.1 Avaya Command Line Interface (ACLI)

1 Issue the command */cfg/sys/host <host number>/license*. When requested paste the license key provided by Avaya. Press *Enter* to create a new line followed by three periods to install the license key:

```
>> Main# cfg/sys/host 1/license
```

```
Paste the license, press Enter to create a new line,
and then type "..." (without the quotation marks)
to terminate.

> -----BEGIN LICENSE-----
> U2FsdGVkX1/K74AfPIfZCliqTvpNRmvoQRDOKKUS/9snWr2/Oac1M1sHJF4LVAdf
> Rs2TK88BPSIp17yqObVnvxhtIv7gtlsZ7U3vWbuCJkqR4ACGDE181RG3MdyU7eUO
> fmNX1pRHLaOjmiiObof5u1/UzfeEFvyZrYdtsQDDBmw/Dkfa/s7amDNWP+1pz2iBr
> D1BYSuiIpj8=
> -----END LICENSE-----
> ...
```

```
License loaded
```

2 Issue the apply command to save and activate the license:

```
>> Main# apply
```

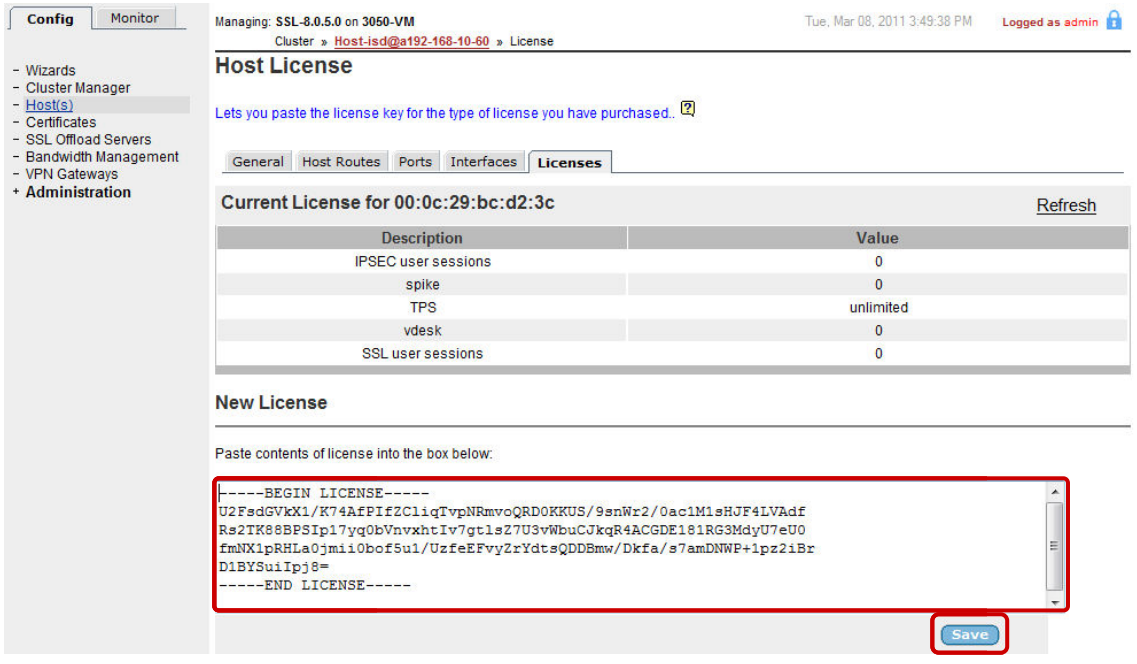
```
Changes applied successfully.
```

Installed licenses may be viewed in the CLI by issuing the ***/info/licenses*** command.

2.2.10.2 Browser Based Interface (BBI)

1 Using the BBI select *Config* > *Host(s)*. From the *SSL-VPN Host(s)* list select the VPN Gateway to install the new license to:

2 Select *Licenses*. In the *New License* field paste the license key provided by Avaya then click *Save*.



3. Ethernet Switching

3.1 Ethernet Routing Switch 2500 series

The Avaya Ethernet Routing Switch 2500 series (ERS2500) is a family of cost-effective 10/100BaseT Ethernet switching products perfectly suited for branch offices of larger enterprises, or the enterprise edge, requiring a low-cost but feature-rich solution in the wiring closet. Ideal for enterprises with big plans, but not-so-big budgets, the Ethernet Routing Switch 2500 offers convergence-ready flexibility, high-speed connectivity and cost-effective next-generation technology today - while ensuring high resiliency & performance that customers need.

3.1.1 Licensing

The Avaya ERS2500 series of switches support the following licensing levels:

Base	Stacking
▪ Core Layer 2 Switching ▪ Local & Static Routing ▪ Basic & Advanced QoS ▪ Security	▪ Stacking Only

Table 3.1.1 – Ethernet Routing Switch 2500 Licensing Levels

3.1.2 Base License

A Base Software License Kit is required with each ERS2500 switch and is automatically included with the purchase of each switch. The Base Software License features provide core Layer 2 switching, static IP routing, advanced QoS, convergence (ADAC & LLDP), security and DHCP Server functionality at no additional cost.

3.1.3 Stacking License

A Stacking License is only required for standalone versions of the ERS2500 (order codes AL25**00**xxx-E6) where stacking functionality is required, enabling up to eight ERS 2500 switches to form a resilient virtual chassis. A Stacking license is purchased separately and is in addition to the base software license for standalone versions of the ERS2500. NOTE: Stacking Licenses do not apply to, and are not required for Stack Enabled models of ERS2500 (order codes AL25**15**xxx-E6).

One Stacking license is required for each standalone ERS 2500. Stacking License Kits are available in kits of 1, 10, 50 and 100 licenses.

Table 3.1.3.1 provides Stacking license kit order codes available for the ERS 2500 series switches:

Order Code	Description
AL2515001	Ethernet Routing Switch 2500 Stacking License Kit, for 1 switch, to enable stacking functionality on ERS2500 series standalone switches. For use with AL2500xxx-E6 order codes. (one license required per switch).
AL2515002	Ethernet Routing Switch 2500 Stacking License Kit, for up to 10 switches, to enable stacking functionality on ERS2500 series standalone switches. For use with AL2500xxx-E6 order codes. (one license required per switch).
AL2515003	Ethernet Routing Switch 2500 Stacking License Kit, for up to 50 switches, to enable stacking functionality on ERS2500 series standalone switches. For use with AL2500xxx-E6 order codes. (one license required per switch).
AL2515004	Ethernet Routing Switch 2500 Stacking License Kit, for up to 100 switches, to enable stacking functionality on ERS2500 series standalone switches. For use with AL2500xxx-E6 order codes. (one license required per switch).

Table 3.1.3-1 – Ethernet Routing Switch 2500 Stacking License Kits

The Ethernet Routing Switch 2500 can also be purchased with stacking pre-enabled on the switch. Stack Enabled ERS2500's do not use or require a stacking license file to enable stacking functionality. Stack Enabled units rear-ports are set to Stacking Mode by default in the factory and are ready to stack on delivery to the end-user.

Standalone Ethernet Routing Switch 2500 unit rear-ports are set to Standalone Mode (regular Gigabit ports) by default in the factory and require a stacking license (one per switch) to set the rear-port mode to Stacking Mode in order to support stacking. This is different than software feature licenses for the Ethernet Routing Switch 4500 and 5000 series. If a license is deleted on the base unit or any other unit in a fully licensed stack, the stack will continue to operate until the whole stack is rebooted. This has been done as a safeguard.

Factory defaulting a standalone switch also removes the stack license file. The stacking license file must be re-installed if a standalone switch has been set to factory default.

Table 3.1.3.2 lists the order codes for Stack Enabled Ethernet Routing Switch 2500 series switches:

Order Code	Description
AL2515?01-E6	Ethernet Routing Switch 2526T with 24 10/100 ports, 2 combo 10/100/1000/SFP ports, 2 1000BaseT rear ports & 46cm stack cable, with stacking enabled.
AL2515?02-E6	Ethernet Routing Switch 2550T with 48 10/100 ports, 2 combo 10/100/1000/SFP ports, 2 1000BaseT rear ports & 46cm stack cable, with stacking enabled.
AL2515?11-E6	Ethernet Routing Switch 2526T-PWR with 24 10/100 ports (12 ports support PoE), 2 combo 10/100/1000/SFP ports, 2 1000BaseT rear ports & 46cm stack cable, with stacking enabled.
AL2515?12-E6	Ethernet Routing Switch 2550T-PWR with 48 10/100 ports (24 ports support PoE), 2 combo 10/100/1000/SFP ports, 2 1000BaseT rear ports & 46cm stack cable, with stacking enabled.

Table 3.1.3-2 – Ethernet Routing Switch 2500 Stack Enabled Models

3.1.4 License Keying and Methodology

Stacking licenses are based on the MAC address of the Ethernet Routing Switch 2500 and each standalone switch must have a stacking license installed before a switch stack can be created. Additionally for stacking support, each ERS2500 must be running software release v4.1 or above.

To generate a stacking license, the MAC address of each Ethernet Routing Switch 2500 must be obtained and provided to http://www.avayadatalicensing.com before a license file activating the stacking feature can be generated. Once the license file has been obtained and installed on the ERS2500, and the rear-ports mode is set to Stacking Mode, stacking functionality will be enabled after the next reboot.

The MAC address of an Ethernet Routing Switch 2500 series switch may be obtained by ACLI using the following procedure:

Using ACLI, issue the *show sys-info* command:

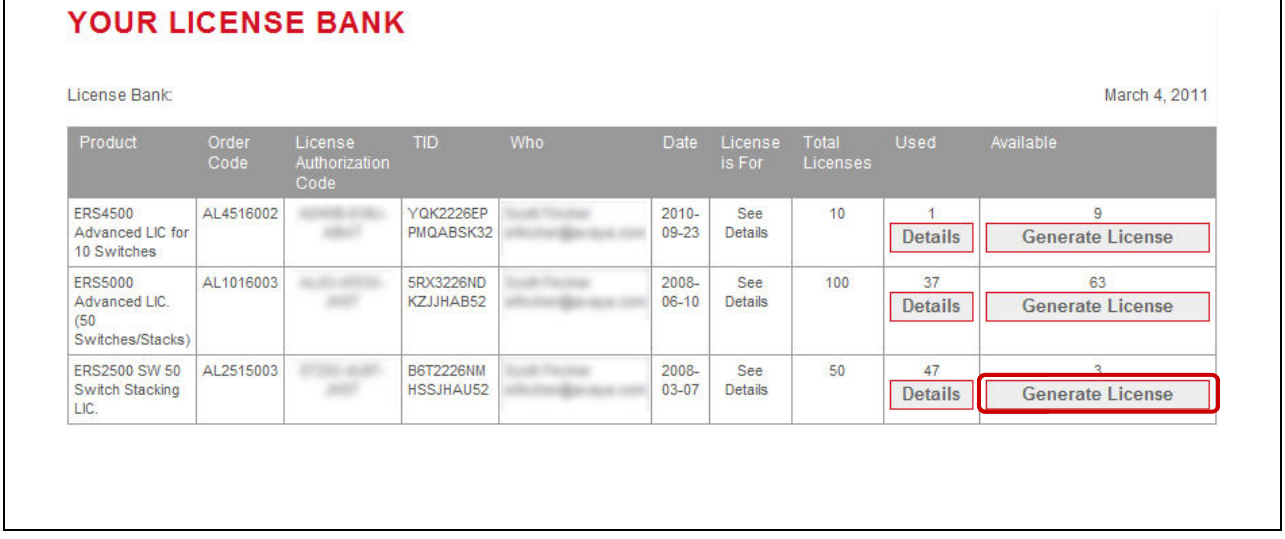
```
2526T-PWR# show sys-info
```

```
Operation Mode:       Switch
MAC Address:          00-23-0B-AD-98-00
Reset Count:
```

3.1.5 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download a stacking license file.

1 Access the *License Bank* page where the Stacking License was deposited, select the Stacking *License Authorization Code* then click *Generate License*:

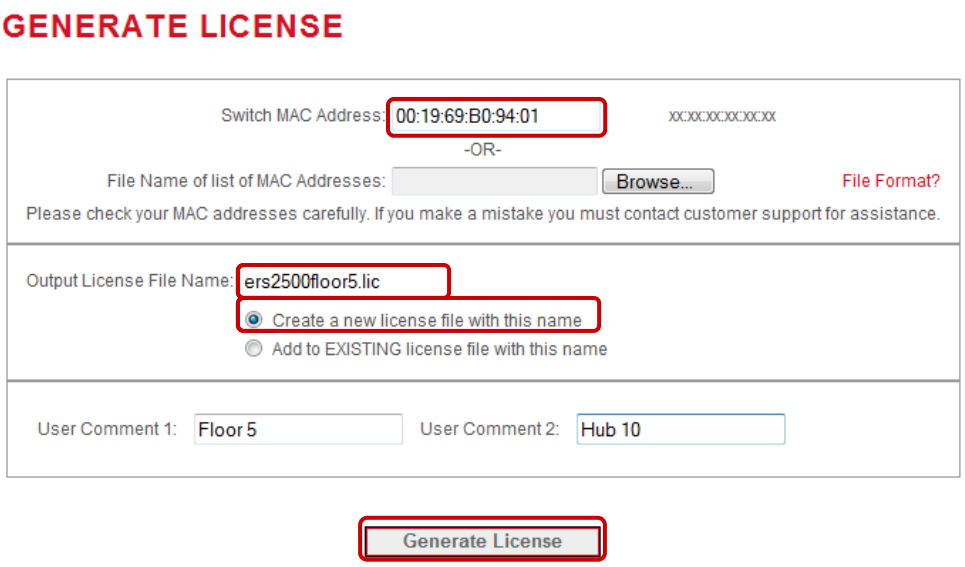


YOUR LICENSE BANK

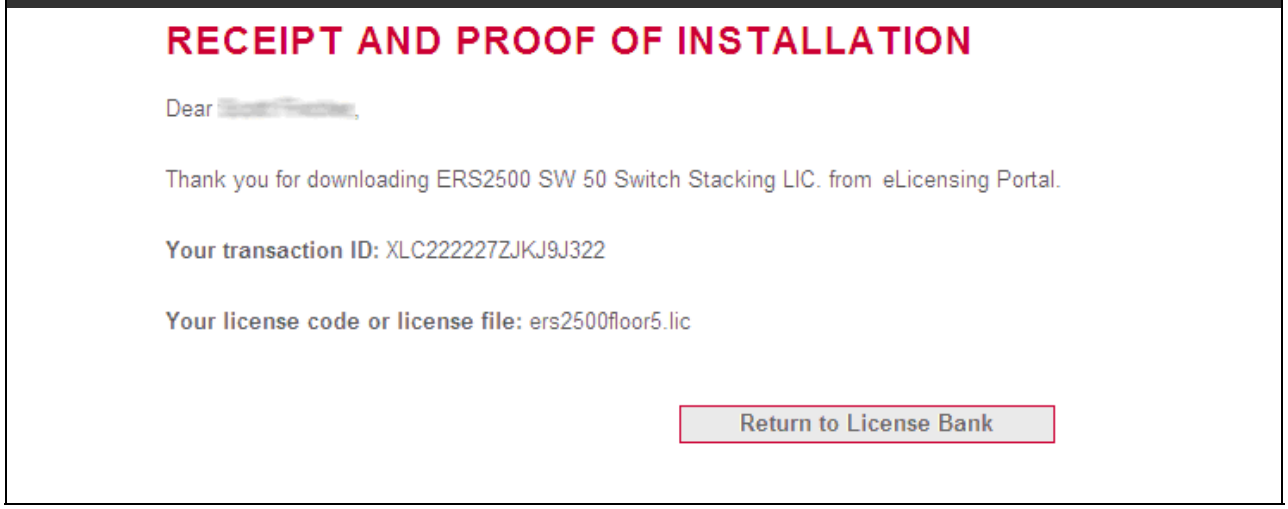
License Bank: March 4, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2	In the *Generate License* page enter the required information to generate the license and then click *Generate License*:
Switch MAC Address	Enter the MAC address of the Ethernet Routing Switch 2500 obtained using the show sys-info command.
File Name of list of MAC Addresses	An ASCII file containing multiple Ethernet Routing Switch 2500 MAC addresses which that allows a license file to be generated with multiple MACs in one transaction: ▪ One MAC address entry per line. ▪ MAC addresses must be capitalized with each pair of characters separated by colons (XX:XX:XX:XX:XX:XX).
Output License File Name	The name of the license file that will be emailed when the license is generated. ▪ Maximum of 63 alphanumeric characters (lower case). ▪ No spaces or special characters allowed. ▪ An underscore "_" is permitted. ▪ A period followed by a three letter extension is required.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.


GENERATE LICENSE
Switch MAC Address: 00:19:69:B0:94:01
xx:xx:xx:xx:xx:xx
-OR-
File Name of list of MAC Addresses:
Browse...
File Format?
Please check your MAC addresses carefully. If you make a mistake you must contact customer support for assistance.
Output License File Name: ers2500floor5.lic
Create a new license file with this name
Add to EXISTING license file with this name
User Comment 1: Floor 5
User Comment 2: Hub 10
Generate License

3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.



RECEIPT AND PROOF OF INSTALLATION

Dear [redacted],

Thank you for downloading ERS2500 SW 50 Switch Stacking LIC. from eLicensing Portal.

Your transaction ID: XLC222227ZJKJ9J322

Your license code or license file: ers2500floor5.lic

Return to License Bank

The license file is a compressed binary file. It is important that when downloading or saving this file, that your browser does not automatically decompress this file or you will receive an error when adding the license to the switch.

3.1.6 License Installation

A license file may be installed using the command line interface or Enterprise Device Manager by performing one of the following procedures:

3.1.6.1 Avaya Command Line Interface (ACLI)

1 Using ACLI enable the privExec mode and issue the *copy tftp license <tftp-server-ip> <license-file>* command where *tftp-server-ip* is the IP address of the TFTP server and *license-file* is the name of the license file:

```
ers2500-stack# copy tftp license 192.168.40.100 ers2500floor5.lic
```

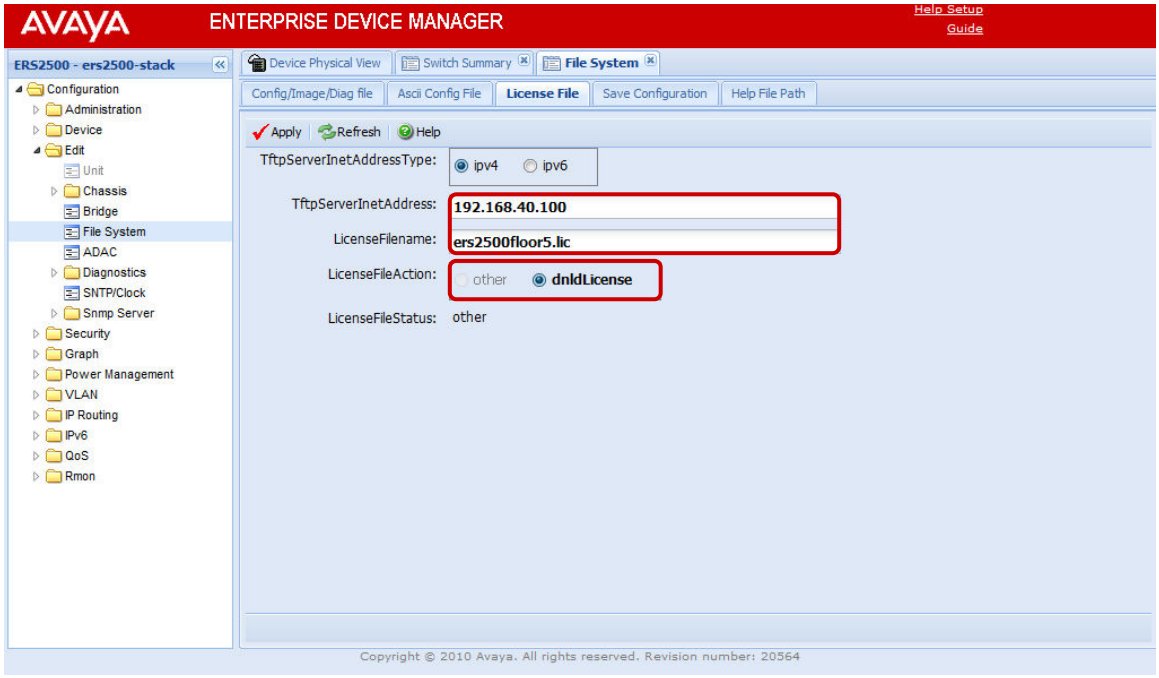
After the stacking license file has been successfully uploaded, the operational mode of the rear-port can then be set to stacking. Note that changing the operation mode of the rear port will require a switch reset for the operational mode change to take effect.

Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.1.6.2 Avaya Enterprise Device Manager (EDM)

1 In EDM select *Edit* then *File System*. Select the *License File* tab and in the *TftpServerInetAddress* field enter the IP address of the TFTP server where the license file is located. In the *LicenseFilename* field enter the name and extension of the license file. Select *dnldLicense* then click *Apply*:



After the stacking license file has been successfully uploaded, the operational mode of the rear-port can then be set to stacking. Note that changing the operation mode of the rear port will require a switch reset for the operational mode change to take effect.

Installed licenses may be viewed in the CLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.1.7 Replacing a Switch

In the event of a switch failure, licenses may be transferred between Ethernet Routing Switch 2500 series switches using the following procedure:

1 Access the *License Bank* page where the Stacking license was deposited. Locate the stacking license for the Ethernet Routing Switch 2500 to be transferred then click *Details*:

YOUR LICENSE BANK

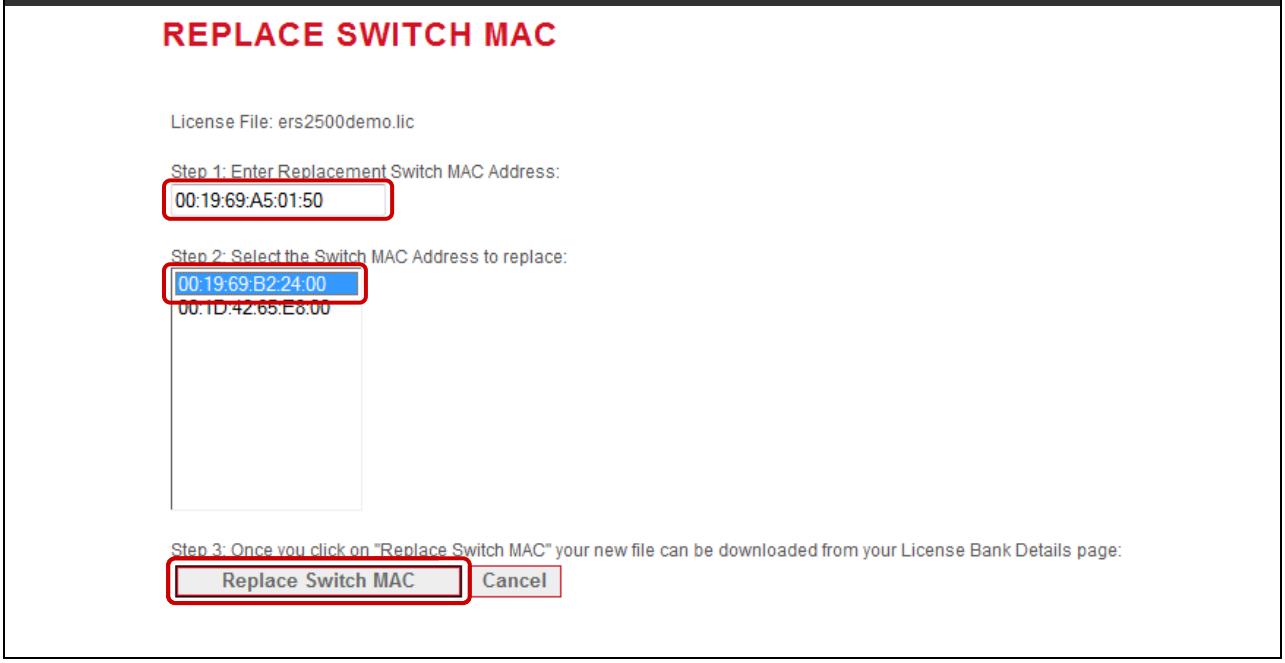
License Bank: March 4, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2 In the *License Bank Details* page locate the license for the Ethernet Routing Switch 2500 to be transferred then click *Replace Switch*:

Product	ERS2500 SW 50 Switch Stacking LIC.
Order Code	AL2515003
License Authorization Code	[redacted]
Transaction ID	YJU2222A5BK6A6J322-1
Licensee	[redacted]
License Emailed To	[redacted]
License Generation Date	2009-02-10
License Type	GENLIC
License or License File	ers2500demo.lic Replace Switch Download
MACs	ers2500demo.lic.macs
Comment 1	
Comment 2	

3 In the *Replace Switch MAC* page, enter the *Replacement Switch MAC Address* then select the *Switch MAC address to replace*. Click *Replace Switch MAC*:


REPLACE SWITCH MAC
License File: ers2500demo.lic
Step 1: Enter Replacement Switch MAC Address:
00:19:69:A5:01:50
Step 2: Select the Switch MAC Address to replace:
00:19:69:B2:24:00
00:1D:42:65:E8:00
Step 3: Once you click on "Replace Switch MAC" your new file can be downloaded from your License Bank Details page:
Replace Switch MAC
Cancel

3.2 Ethernet Routing Switch 4000 series

The Avaya Ethernet Routing Switch 4000 Series (ERS4000) is a Stackable system providing high performance, convergence-ready, secure and resilient Ethernet switching connectivity. Thirteen (13) model variants are available in the ERS4500 family, while 4 models are available in the ERS4800 family totaling 17 model variants. The ERS4000 series provides support for 10/100 and 10/100/1000 switching, Power-over-Ethernet and PoE Plus (802.3af & 802.3at), has 10 Gigabit Ethernet uplink options, and are all stack compatible with each other to create a superior virtual chassis ideally suited for Enterprise wiring closet and other network edge deployments.

3.2.1 Licensing

The Avaya ERS 4000 series switches support the following licensing levels from software release v5.6:

Base	Advanced (AD)
▪ Core Layer 2 Switching ▪ Local, static & RIP Routing ▪ Basic & Advanced QoS ▪ Advanced Convergence and Avaya Energy Saver ▪ Security ▪ Stacking ▪ IPFIX	▪ OSPF ▪ VRRP ▪ ECMP *(added in rls 5.6)*

Table 3.2.1 – Ethernet Routing Switch 4000 Licensing Levels

3.2.2 Base License

A Base Software License Kit is required with each ERS4000 switch and is automatically included with the purchase of each switch. The Base Software License features provide core Layer 2 switching, basic IP routing (static and RIP), Advanced QoS, convergence and energy saving features plus stacking and security functionality etc, at no additional cost.

3.2.3 Advanced License

ERS 4000 series software release 5.6 requires an Advanced license to enable OSPF, VRRP and ECMP functionality. If required, an Advanced license is purchased separately to the Base software license and unlocks additional features to the base features when an advanced license file is installed.

An Advanced License is required for each standalone or stack of Ethernet Routing Switch 4000s. Advanced License Kits are available in kits of 1 and 10 licenses.

Table 3.2.3 provides the Advanced License Kit order codes available for the ERS 4000 series switches:

Order Code	Description
AL4516001	Ethernet Routing Switch 4500 series Advanced License kit for 1 switch/stack. Enabled features: OSPF, VRRP & ECMP. (one license required per stack or standalone unit).
AL4516002	Ethernet Routing Switch 4500 series Advanced License kit for up to 10 switches/stacks. Enabled features: OSPF, VRRP & ECMP. (one license required per stack or standalone unit).

Table 3.2.3 – Ethernet Routing Switch 4500 Advanced License Kits

IPFIX is included in the Base License.

3.2.4 License Keying and Methodology

Ethernet Routing Switch 4000 series licensing is based on a switch or stack and a single license is required for a standalone switch or for a stack of up to eight units.

To generate an Advanced license file, the Base MAC address of the Ethernet Routing Switch 4000 must be obtained and provided to http://www.avayadatalicensing.com before a license file activating Advanced features can be generated. Once a license file has been obtained and installed on the ERS4000, Advanced features will be enabled.

3.2.4.1 Licensing on a switch stack

From ERS4000 software release v5.4, when Advanced licensing first commenced, Licensing Automatic Unit Replacement (LAUR) was introduced to simplify the operation of licensing for a switch stack. The Licensing AUR function only requires that the Base Unit's MAC address reside within the license file for a switch stack and does not require entry of the Temporary Base Unit MAC address (typically unit #2). During the license generation process, the license generation screen for an ERS4500 License Authorization Code (LAC) only requests the Base Unit MAC for one switch/switch stack, or multiple Base MACs (using a text file) for multiple switch/switch stacks.

After a license file is installed, Licensing AUR creates a virtual license key which is copied to all units within the stack. In the event of a Base Unit failure, the remaining units continue to function via the virtual key maintaining operation of licensed features. The Base Unit can be replaced and the virtual license key will be transferred to the new Base Unit, as long as at least one unit remains operational in the stack.

NOTE: it is recommended to perform the "Replace MAC" steps on the licensing portal if a Base Unit is replaced and that the new Base Unit MAC is substituted in the license file so the license file is re-generated and then re-installed on the switch stack. This will ensure licensed feature operation if the entire switch stack is power cycled or rebooted.

3.2.4.2 Base MAC Address (standalone switch)

Obtaining the Base MAC address of a standalone (not stacked) Ethernet Routing Switch 4500 can be obtained by ACLI using the following procedure:

Using ACLI, issue the *show sys-info* command:

```
4524GT# show sys-info
```

```
Operation Mode:          Switch
MAC Address:             00-1D-42-37-40-00
Resets:
...
```

3.2.4.3 Base MAC Address (existing switch stack)

Obtaining the Base MAC address of the Base Unit in an existing stack of Ethernet Routing Switch 4500's can be obtained by ACLI using the following procedure:

Using ACLI, issue the *show system verbose* command:

```
4524GT# show system verbose
```

```
Operation Mode:          Stack, Unit #1
Size of Stack:           3
Base Unit:               1
...
...
Unit #1 (Base Unit):
Switch Model:            4524GTX
...
MAC Address:             00-1D-42-37-40-00
...
```

IMPORTANT: Do not record or use the stack MAC address ending in '01' in the first few lines of the '*show system verbose*' or '*show sys-info*' command output on an existing switch stack.

3.2.5 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download an Advanced license file.

1 Access the *License Bank* page where the Advanced License was deposited, select the Advanced *License Authorization Code* then click *Generate License*:

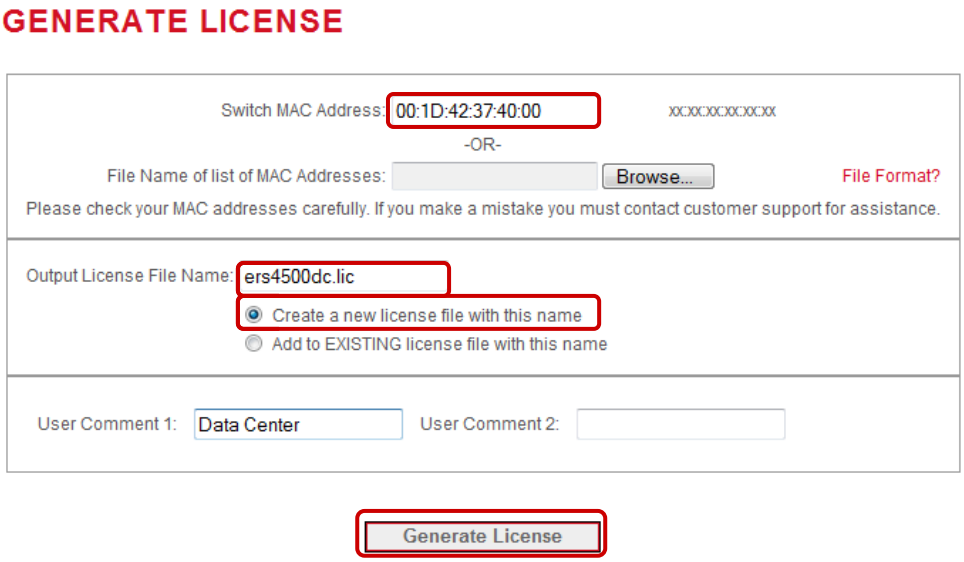
YOUR LICENSE BANK

License Bank: March 4, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

Switch MAC Address	Enter the MAC address of the Ethernet Routing Switch 4500 obtained using the show sys-info or show system verbose command.
File Name of list of MAC Addresses	An ASCII file containing multiple Ethernet Routing Switch 4500 MAC addresses which that allows a license file to be generated with multiple MACs in one transaction: ▪ One MAC address entry per line. ▪ MAC addresses must be capitalized with each pair of characters separated by colons (XX:XX:XX:XX:XX:XX).
Output License File Name	The name of the license file that will be emailed when the license is generated. ▪ Maximum of 63 alphanumeric characters (lower case). ▪ No spaces or special characters allowed. ▪ An underscore "_" is permitted. ▪ A period followed by a three letter extension is required.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.


GENERATE LICENSE
Switch MAC Address: 00:1D:42:37:40:00
xx:xx:xx:xx:xx:xx
-OR-
File Name of list of MAC Addresses:
Browse...
File Format?
Please check your MAC addresses carefully. If you make a mistake you must contact customer support for assistance.
Output License File Name: ers4500dc.lic
Create a new license file with this name
Add to EXISTING license file with this name
User Comment 1: Data Center
User Comment 2:
Generate License

3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.

RECEIPT AND PROOF OF INSTALLATION
Dear
Thank you for downloading ERS4500 Advanced LIC for 10 Switches from Avaya eLicensing Portal.
Your transaction ID: L4H3222AXFHCA3J322
Your license code or license file: ers4500dc.lic
Return to License Bank
(Please do not use the back button)
© Avaya Inc. 2009-2011
Powered By GlobalWare Solutions

The license file is a compressed binary file. It is important that when downloading or saving this file, that your browser does not automatically decompress this file or you will receive an error when adding the license to the switch.

3.2.6 License Installation

A license file may be installed using the command line interface or Enterprise Device Manager by performing one of the following procedures:

3.2.6.1 Avaya Command Line Interface (ACLI)

1 Using ACLI enable the privExec mode and issue the *copy tftp license <tftp-server-ip> <license-file>* command where *tftp-server-ip* is the IP address of the TFTP server and *license-file* is the name of the license file:

```
4524GT# copy tftp license 192.168.40.100 ers4500dc.lic
```

After the Advanced license file has been successfully uploaded, you will need to reboot the switch for the licensed features to be activated.

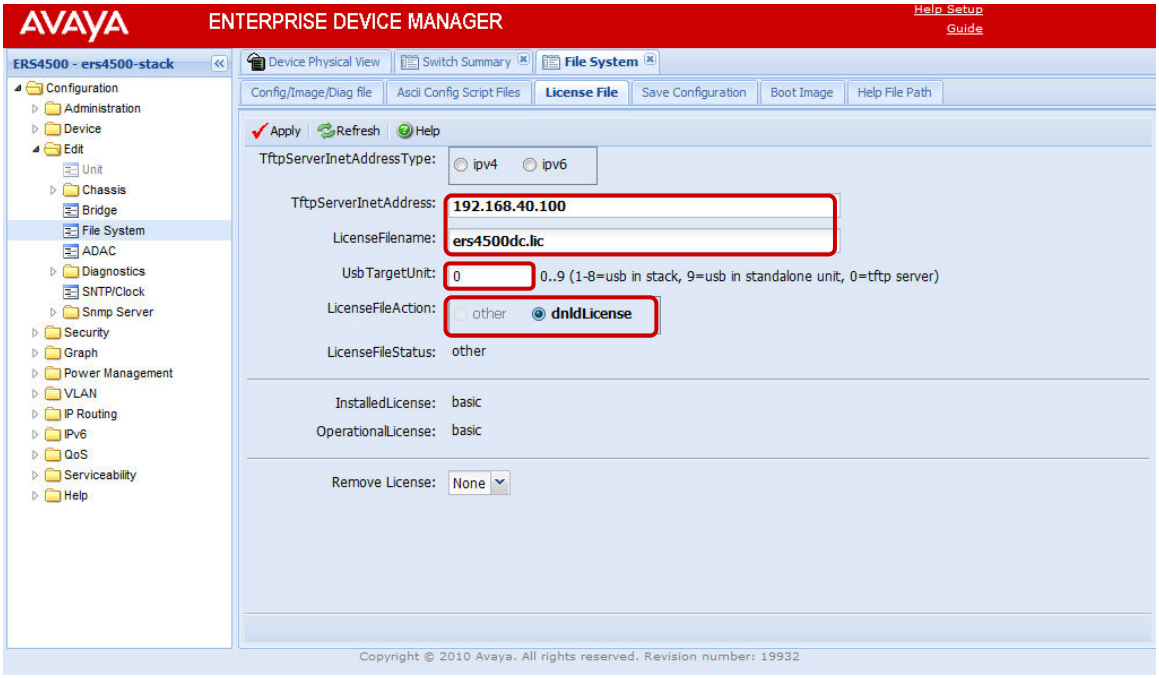
Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

If the license file is on a USB mass storage device, use the ***copy usb license filename <filename>*** *or* ***copy usb license filename <filename> unit <1-8>*** command to install the license.

3.2.6.2 Avaya Enterprise Device Manager (EDM)

1 In EDM select *Edit* > *File System*. Select the *License File* tab and in the *TftpServerInetAddress* field enter the IP address of the TFTP server where the license file is located. In the *LicenseFilename* field enter the name and extension of the license file. In the *UsbTargetUnit* field enter *0 (default)* to select TFTP server. Select *dnldLicense* then click *Apply*:



After the Advanced license file has been successfully uploaded, you will need to reboot the switch for the licensed features to be activated.

Installed licenses may be viewed in the CLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.2.7 Replacing a Switch

In the event of a switch failure, licenses may be transferred between Ethernet Routing Switch 4500 series switches using the following procedure:

1 Access the *License Bank* page where the Advanced license was deposited. Locate the Advanced license for the Ethernet Routing Switch 4500 to be transferred then click *Details*:

YOUR LICENSE BANK

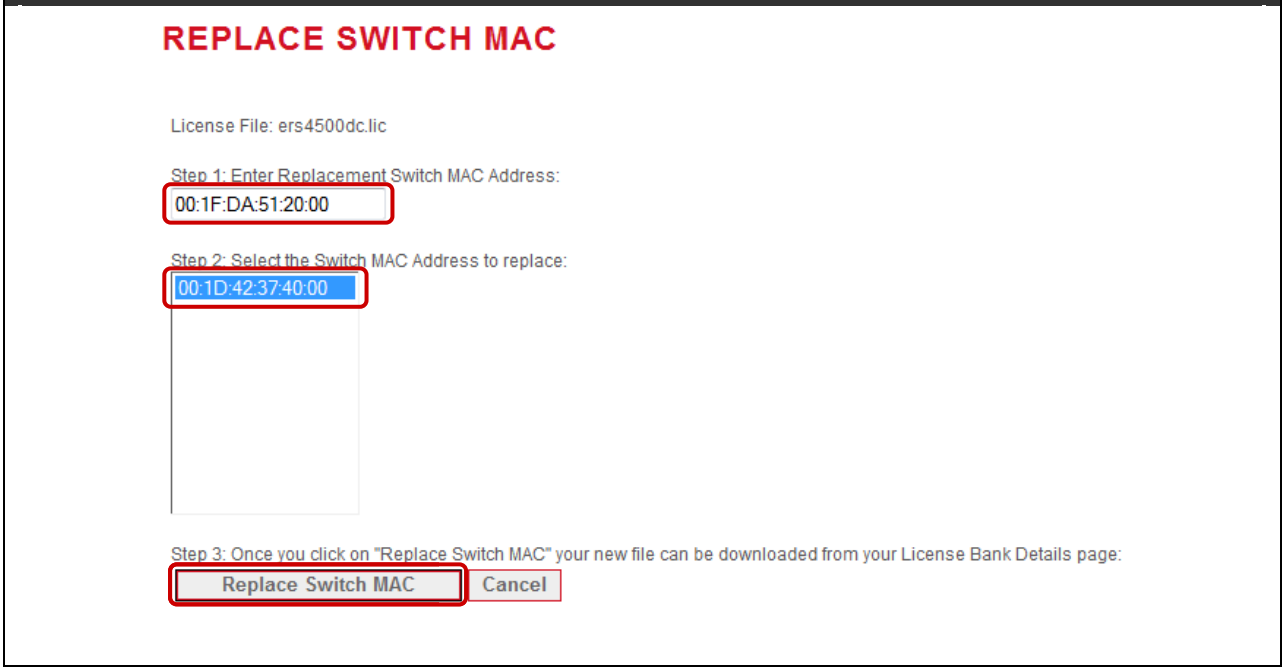
License Bank: March 4, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2 In the *License Bank Details* page locate the license for the Ethernet Routing Switch 4500 to be transferred then click *Replace Switch*:

Product	ERS4500 Advanced LIC for 10 Switches
Order Code	AL4516002
License Authorization Code	[redacted]
Transaction ID	ZNN2222SFX5SA7J322-1
Licensee	[redacted]
License Emailed To	[redacted]
License Generation Date	2011-03-04
License Type	GENLIC
License or License File	ers4500dc.lic Replace Switch Download
MACs	ers4500dc.lic.macs
Comment 1	Data Center
Comment 2	

3 In the *Replace Switch MAC* page, enter the *Replacement Switch MAC Address* then select the *Switch MAC address to replace*. Click *Replace Switch MAC*:


REPLACE SWITCH MAC
License File: ers4500dc.lic
Step 1: Enter Replacement Switch MAC Address:
00:1F:DA:51:20:00
Step 2: Select the Switch MAC Address to replace:
00:1D:42:37:40:00
Step 3: Once you click on "Replace Switch MAC" your new file can be downloaded from your License Bank Details page:
Replace Switch MAC
Cancel

3.2.8 License Scenarios

An Ethernet Routing Switch 4000 series switch Advanced License can be installed on an individual switch or stack. The following section will detail what happens and what is required in case of a switch/stack becoming inoperable or when creating/adding units to a stack. In all cases of a switch/stack becoming inoperable, it is recommended to open a case with the Avaya Support Services (GSS) group as a first course of action.

3.2.8.1 Loss of Base Unit in a Stack

When a License file is generated on the Avaya electronic licensing portal, only the MAC address of the base unit must be entered. The Licensing AUR (LAUR) feature creates a virtual license key when an Advanced license file is installed on a switch stack and copies this virtual key to all units in the stack.

If the base unit of the stack is lost, the temporary base unit (typically unit #2) will take over the stack operation and licensed features will continue to operate.

If the base unit is lost due to hardware failure, the unit will need to be replaced in the stack. The switch can be sent back to Avaya for repair/replacement using the RMA process.

When the replacement base unit is installed, it is recommended that you perform the “Replace MAC” procedure on the licensing portal to substitute the new base unit’s MAC address in the existing license file and upload that file to the switch/stack. At the next stack reboot (all units), the updated license file will be used and license features will be available. NOTE: until a full stack reboot, the virtual license will continue to maintain operation of licensed features on all switches.

3.2.8.2 Loss of Temporary Base Unit in a Stack

The loss of the temporary base unit in the stack follows the same scenario as indicated in the previous section. The only difference being that the base unit remains in control of the stack.

3.2.8.3 Adding a Unit to a Stack

When a unit is added to an existing stack, there is no change required to the Advanced License file for the stack. Since the stack already exists, the license file on the base unit and virtual license key for the stack already exists and will extend licensed features to the new unit(s).

3.2.8.4 Adding a Unit to a Switch to Create a Stack

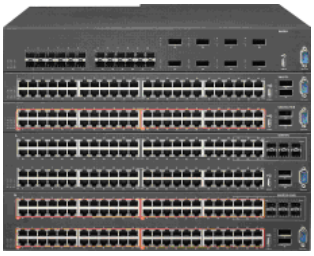
When a license file is generated for a switch, only the base MAC address of that switch is entered in the Avaya electronic licensing portal to create the license file. When a second unit is added to create a switch stack, LAUR will create a virtual license key for the stack and extend licensed features to the new unit.

3.2.8.5 30 Day Trial License

A trial license can be obtained to try out advanced license features for 30 days. This trial license is posted on the Avaya support web site at www.avaya.com/support with the related software images. Trial licenses are obtained from Avaya and installed using ACLI or Enterprise Device Manager. After the trial period has expired the licensed feature is disabled.

3.3 Ethernet Routing Switch 5000 series

ERS 5500 Series



ERS 5600 Series

Avaya's Ethernet Routing Switch 5000 series combines high performance, scalability and advanced Layer 3 features in one versatile solution.

Avaya's Ethernet Routing Switch (ERS) 5000 series is comprised of the 5500 family and the 5600 family of switches. The ERS5000 series switches are Avaya's premier stackable 10/100/1000Mbps & 10Gbps Ethernet Routing Switches and are available in several many models across two families.

The ERS 5500 and 5600 switches come in a number of port configurations from 24 to 96 ports of 10/100/1000 autosensing ports up to 24 Gigabit SFP and 8 10Gigabit XFP ports and are inter-stackable between both families.

These switches are designed to provide high-density Gigabit to the desktop connectivity with and without Power over Ethernet capability suited for mid and large-size enterprise customers' wiring closets. The ERS5000 series is also suitable for small to medium sized core network installations and data center / top of rack solutions.

3.3.1 Licensing

The ERS 5000 series supports the following licensing levels and features from software release v6.3:

Base	Advanced	Premier
▪ Core Layer 2 Switching ▪ Local, static & RIP Routing ▪ Basic & Advanced QoS ▪ Security ▪ Stacking ▪ IPFIX	▪ SMLT ▪ OSPF ▪ ECMP ▪ VRRP ▪ PIM-SM	▪ VRF-Lite

Table 3.3.1 – Ethernet Routing Switch 5000 Licensing Levels

3.3.2 Base License

A Base Software License Kit is required with each ERS5000 switch and is automatically included with the purchase of each switch. The Base Software License features provide core Layer 2 switching, basic IP routing, Advanced QoS, stacking and security functionality at no additional cost.

3.3.3 Advanced License

If required, an Advanced license is purchased separately to the Base software license and unlocks additional features to the base features when an advanced license file is installed.

The ERS5000 series software release 6.3 requires an Advanced license to enable the following features:

- SMLT (Split Multilink Trunking)
- OSPF (Open Shortest Path First) Routing
- ECMP (Equal Cost Multi-Path)
- VRRP (Virtual Routing Redundancy Protocol)
- PIM-SM (Protocol Independent Multicast – Sparse Mode)

An Advanced License is required for a standalone or stack of ERS 5000 series switches. Advanced License Kits for ERS5000 are available in kits of 1, 10, 50 and 100 licenses.

Table 3.3.3 provides the Advanced license kit order codes available for the Ethernet Routing Switch 5000 series switches:

Order Code	Description
AL1016001	Ethernet Routing Switch 5000 series Advanced License Kit, for 1 switch or stack. Enabled features: SMLT, OSPF, ECMP, VRRP, and PIM-SM. (one license required per stack or standalone unit).
AL1016002	Ethernet Routing Switch 5000 series Advanced License Kit, for up to 10 switches or stacks. Enabled features: SMLT, OSPF, ECMP, VRRP and PIM-SM. (one license required per stack or standalone unit).
AL1016003	Ethernet Routing Switch 5000 series Advanced License Kit, for up to 50 switches or stacks. Enabled features: SMLT, OSPF, ECMP, VRRP, and PIM-SM. (one license required per stack or standalone unit).
AL1016004	Ethernet Routing Switch 5000 series Advanced License Kit, for up to 100 switches or stacks. Enabled features: SMLT, OSPF, ECMP, VRRP, and PIM-SM. (one license required per stack or standalone unit).

Table 3.3.3 – Ethernet Routing Switch 5000 Advanced License Kits

3.3.4 Premier License

If required, a Premier license is purchased separately to the Base software license and unlocks all possible features to the base features when a Premier license file is installed. If Premier licensed feature(s) are required, then it is not necessary to purchase an Advanced license. A Premier license will unlock both Advanced and Premier features (ALL features).

ERS5000 series software release 6.3 requires a Premier license to enable the following features:

- Advanced features plus;
- VRF-Lite (Virtual Routing and Forwarding – Lite version)

A Premier License is required for each standalone or stack of ERS 5000 series switches. The Premier License Kit for the ERS5000 series is only available in a kit of 1 license.

Table 3.3.4 provides the Premier license kit order codes available for the ERS5000 series switches:

Order Code	Description
AL1017001	Ethernet Routing Switch 5000 series Premier License Kit, for 1 switch or stack. Enabled features: Advanced License features, plus VRF-Lite. (one license required per stack or standalone unit).

Table 3.3.4 – Ethernet Routing Switch 5000 Premier License Kits

3.3.5 License Keying and Methodology

Ethernet Routing Switch licensing is based on a switch or stack and a one license is required for a standalone switch or for a stack of up to eight units.

To generate an Advanced license, the Base MAC address of an Ethernet Routing Switch 5000 must be obtained and provided to http://www.avayadatalicensing.com before a license file activating Advanced features can be generated. Once the license file has been obtained and installed on the Ethernet Routing Switch 5000, Advanced features will be enabled.

3.3.5.1 Licensing on a switch stack

From ERS5000 software release v6.2, Licensing Automatic Unit Replacement (LAUR) was introduced to simplify the operation of licensing for a switch stack. The Licensing AUR function only requires that the Base Unit's MAC address reside within the license file for a switch stack and does not require entry of the Temporary Base Unit MAC address (typically unit #2). During the license generation process, although the license generation screen for an ERS5000 License Authorization Code (LAC) requests the Base Unit MAC and the Temporary Base Unit (TBU) MAC, it is not necessary to enter the TBU MAC address.

After a license file is installed, Licensing AUR creates a virtual license key which is copied to all units within the stack. In the event of a Base Unit failure, the remaining units continue to function via the virtual key maintaining operation of licensed features. The Base Unit can be replaced and the virtual license key will be transferred to the new Base Unit, as long as at least one unit remains operational in the stack.

NOTE: it is recommended to perform the "Replace MAC" steps on the licensing portal if a Base Unit is replaced and that the new Base Unit MAC is substituted in the license file so the license file is re-generated and then re-installed on the switch stack. This will ensure licensed feature operation if the entire switch stack is power cycled or rebooted.

3.3.5.2 Base MAC Address (standalone switch)

For standalone units, licensing is based on the MAC address of the standalone unit. The MAC address of an Ethernet Routing Switch 5000 may be obtained by ACLI using the following procedure:

Using ACLI, issue the *show sys-info* command:

```
5650TD# show sys-info
```

```
Operation Mode:          Switch
MAC Address:             00-1B-4F-B0-54-00
Reset Count:
```

3.3.5.3 Base MAC Address (existing switch stack)

The Base MAC address of the Base Unit in an existing stack of Ethernet Routing Switch 5000's can be obtained by ACLI using the following procedure:

(For Advanced licenses on ERS5000 software release 6.1 or below, also record the MAC address of the Temporary Base Unit - typically unit #2)

Using ACLI, issue the *show system verbose* command:

```
5520-48T# show system verbose
```

```
System Information:
     Operation Mode:   Stack, Unit #1
     Size of Stack:    3
     Base Unit:        1
...
...

Unit #1 (Base Unit):
        Switch Model:         5632FD
...
        MAC Address:          00-12-83-96-78-00
...
Unit #2:
        Switch Model:         5650TD-PWR
...
        MAC Address:          00-12-83-2A-5B-00
...
```

Feature licensing is based on the MAC address of the Base Unit from software release 6.2. The Temporary Base Unit (typically unit #2) must be included in the license file for switch stacks running software release 6.1 or lower. In the event of a Base Unit failure, the Temporary Base Unit will take over the stack operation and will maintain a valid license for Advanced features.

From the ERS5000 v6.2 release, Licensing AUR (LAUR) is supported. This means that only the Base Unit MAC address for a switch stack is required when generation a license file. LAUR will maintain licensed feature operation for the switch stack in the event of a Base Unit failure.

IMPORTANT: Do not to record or use the stack MAC address ending in '01' in the first few lines of the '*show system verbose*' or '*show sys-info*' command output on an existing switch stack.

3.3.6 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download an Advanced license file.

1 Access the *License Bank* page where the Advanced License was deposited, select the Advanced *License Authorization Code* then click *Generate License*:

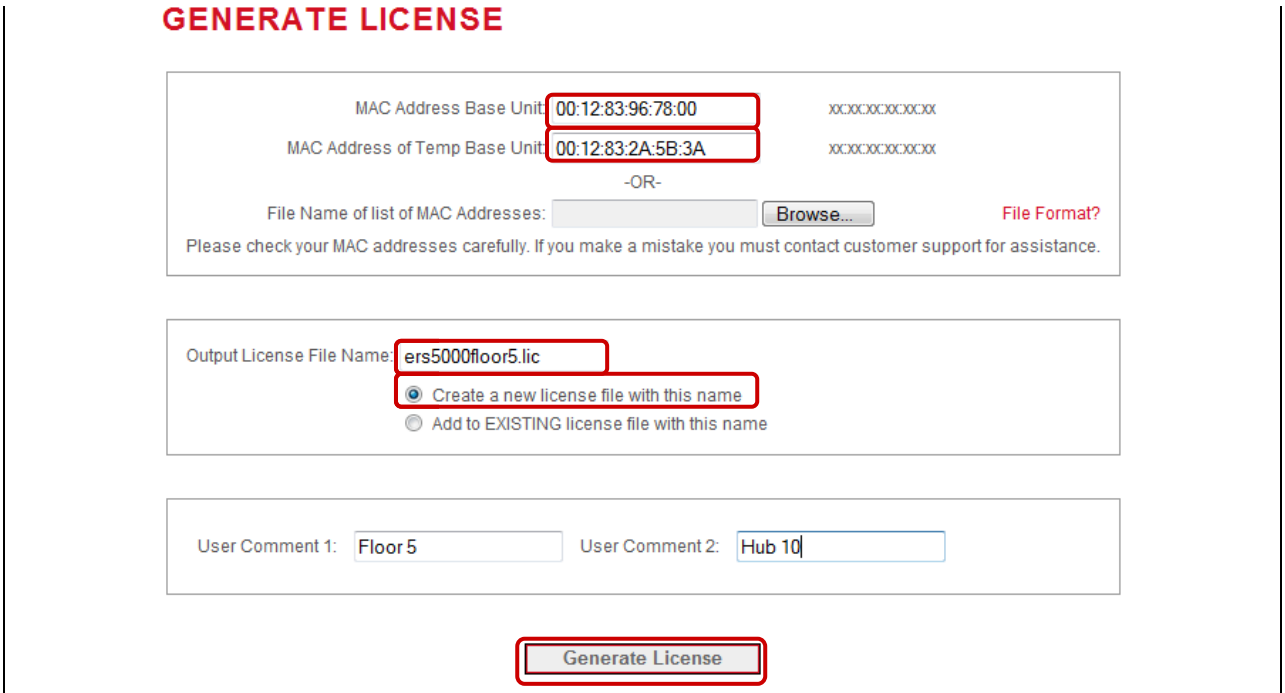
YOUR LICENSE BANK

License Bank: March 4, 2011

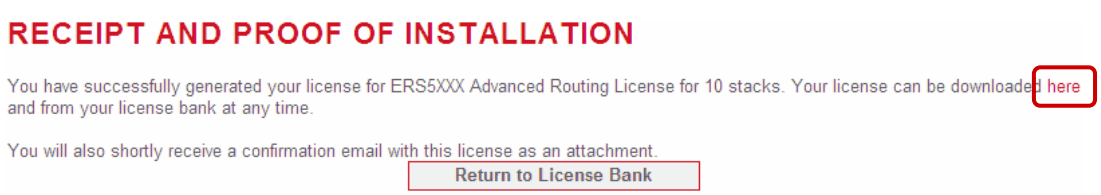
Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

MAC Address Base Unit	Enter the MAC address of the standalone switch obtained using the ***show sys-info*** command or the Base Unit in the stack obtained using the ***show system verbose*** command.
MAC Address of Temp Base Unit	Enter the MAC address of the temporary base unit (unit 2) in the stack obtained using the ***show system verbose*** command. NOT REQUIRED for s/w v6.2.
File Name of list of MAC Addresses	An ASCII file containing multiple Ethernet Routing Switch 5000 series MAC addresses which that allows a license file to be generated with multiple MACs in one transaction: ▪ One MAC address entry per line. ▪ MAC addresses must be capitalized with each pair of characters separated by colons (XX:XX:XX:XX:XX:XX).
Output License File Name	The name of the license file that will be emailed when the license is generated. ▪ Maximum of 63 alphanumeric characters (lower case). ▪ No spaces or special characters allowed. ▪ An underscore "_" is permitted. ▪ A period followed by a three letter extension is required.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.


GENERATE LICENSE
MAC Address Base Unit: 00:12:83:96:78:00 xx:xx:xx:xx:xx:xx
MAC Address of Temp Base Unit: 00:12:83:2A:5B:3A xx:xx:xx:xx:xx:xx
-OR-
File Name of list of MAC Addresses: Browse... File Format?
Please check your MAC addresses carefully. If you make a mistake you must contact customer support for assistance.
Output License File Name: ers5000floor5.lic
Create a new license file with this name
Add to EXISTING license file with this name
User Comment 1: Floor 5
User Comment 2: Hub 10
Generate License

3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.


RECEIPT AND PROOF OF INSTALLATION
You have successfully generated your license for ERS5XXX Advanced Routing License for 10 stacks. Your license can be downloaded here and from your license bank at any time.
You will also shortly receive a confirmation email with this license as an attachment.
Return to License Bank

The license file is a compressed binary file. It is important that when downloading or saving this file, that your browser does not automatically decompress this file or you will receive an error when adding the license to the switch.

3.3.7 License Installation

A license file may be installed using the command line interface or Enterprise Device Manager by performing one of the following procedures:

3.3.7.1 Avaya Command Line Interface (ACLI)

1 Using ACLI enable the privExec mode and issue the *copy tftp license <tftp-server-ip> <license-file>* command where *tftp-server-ip* is the IP address of the TFTP server and *license-file* is the name of the license file:

```
ERS5520-48T# copy tftp license 192.168.40.100 ers5000floor5.lic
```

After the Advanced license file has been successfully uploaded, you will need to reboot the switch for the licensed features to be activated.

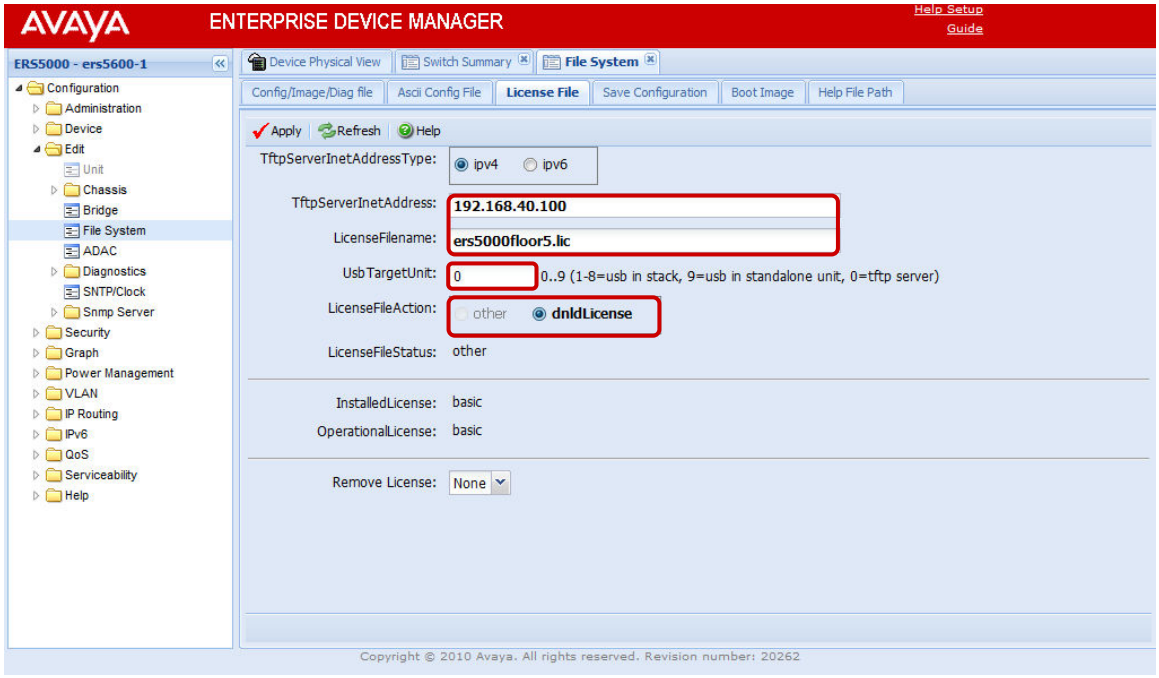
Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

If the license file is put onto a USB mass storage device, use the ***copy usb license filename <filename>*** *or* ***copy usb license filename <filename> unit <1-8>*** commands to install the license.

3.3.7.2 Avaya Enterprise Device Manager (EDM)

1 In EDM select *Edit* then *File System*. Select the *License File* tab and in the *TftpServerInetAddress* field enter the IP address of the TFTP server where the license file is located. In the *LicenseFilename* field enter the full license file name. In the *UsbTargetUnit* field enter *0 (default)* to select TFTP server. Select *dnldLicense* then click *Apply*:



After the Advanced license file has been successfully uploaded, you will need to reboot the switch for the licensed features to be activated.

Installed licenses may be viewed in the CLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.3.8 Replacing a Switch

In the event of a switch failure, licenses may be transferred between Ethernet Routing Switch 5000 series switches using the following procedure:

1 Access the *License Bank* page where the Advanced license was deposited. Locate the Advanced license for the Ethernet Routing Switch 5000 to be transferred then click *Details*:

YOUR LICENSE BANK

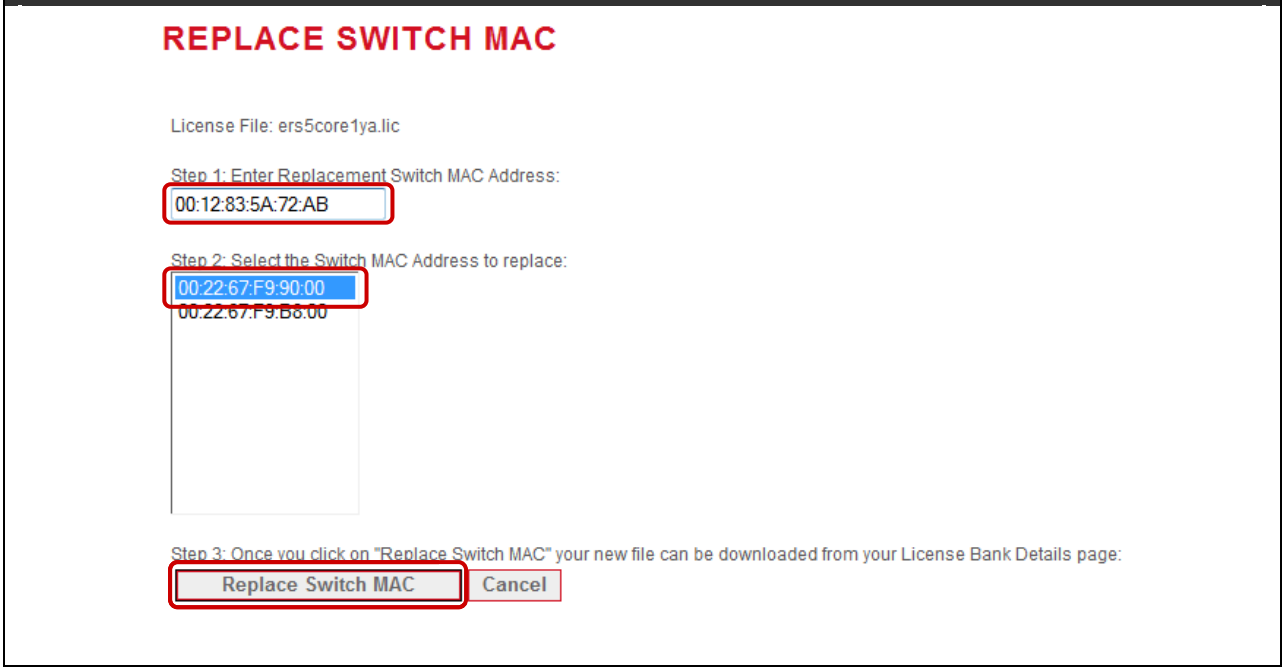
License Bank: March 4, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2 In the *License Bank Details* page locate the license for the Ethernet Routing Switch 5000 to be transferred then click *Replace Switch*:

Product	ERS5000 Advanced LIC. (50 Switches/Stacks)
Order Code	AL1016003
License Authorization Code	[redacted]
Transaction ID	7RS2222J5AE7A2J322-1
Licensee	[redacted]
License Emailed To	[redacted]
License Generation Date	2008-12-11
License Type	GENLIC
License or License File	ers5core1ya.lic Replace Switch Download
MACs	ers5core1ya.lic.macs
Comment 1	
Comment 2	

3 In the *Replace Switch MAC* page, enter the *Replacement Switch MAC Address* then select the *Switch MAC address to replace*. Click *Replace Switch MAC*:


REPLACE SWITCH MAC
License File: ers5core1ya.lic
Step 1: Enter Replacement Switch MAC Address:
00:12:83:5A:72:AB
Step 2: Select the Switch MAC Address to replace:
00:22:67:F9:90:00
00:22:67:F9:B8:00
Step 3: Once you click on "Replace Switch MAC" your new file can be downloaded from your License Bank Details page:
Replace Switch MAC
Cancel

If you have multiple entries for the same license type, you will have to systematically check the LAC entry by clicking on the Details button and looking at the license file name in the transaction entries to locate the file to be updated.

3.3.9 License Scenarios

An Ethernet Routing Switch 5000 series switch Advanced License can be installed on an individual switch or stack. The following section will detail what happens and what is required in case of a switch/stack becoming inoperable or when creating/adding units to a stack. In all cases of a switch/stack becoming inoperable, it is recommended to open a case with the Avaya Support Services group as a first course of action.

3.3.9.1 Loss of Base Unit in a Stack (release 6.2 and above)

When a License file is generated on the Avaya electronic licensing portal, only the MAC address of the base unit must be entered. The Licensing AUR (LAUR) feature (introduced in release v6.2) creates a virtual license key when an Advanced license file is installed on a switch stack and copies the virtual key to all units in the stack. If the base unit of the stack is lost, the temporary base unit (typically unit #2) will take over the stack operation and licensed features will continue to operate.

If the base unit is lost due to a hardware failure, the unit will need to be replaced in the stack. The switch can be sent back to Avaya for repair/replacement using the RMA process.

When the replacement base unit is installed, it is recommended that you perform the “Replace Switch” procedure on the licensing portal to substitute the new base unit’s MAC address in the existing license file and re-upload that file to the switch/stack. At the next stack reboot (all units), the updated license file will be used and license features will be available. NOTE: until a full stack reboot, the virtual license will continue to maintain operation of licensed features on all switches in the stack.

3.3.9.2 Loss of Base Unit in a Stack (release 6.1 and below)

When a License file is generated on the Avaya electronic licensing portal to be installed on an ERS5000 switch running software release 6.1 or lower, the MAC address of the base unit and temporary base unit must be entered. Entering the temporary base unit MAC provides license redundancy on older releases.

If the base unit of the stack is lost, the temporary base unit will take over the stack operation and because the license file contains the temporary base unit's MAC address, all licensed features will continue to operate.

If the base unit is lost due to hardware failure, the unit will need to be replaced in the stack. The switch can be sent back to Avaya for repair/replacement using the RMA process.

When the replacement base unit is installed, it is recommended that you perform the "Replace Switch" procedure on the licensing portal to substitute the new base unit's MAC address in the existing license file and re-upload that file to the switch/stack. At the next stack reboot (all units), the updated license file will be used and license features will be available. NOTE: until a full stack reboot, the temporary base unit will continue to maintain operation of licensed features on all switches in the stack.

3.3.9.3 Loss of Temporary Base Unit in a Stack (release 6.2 & above)

The loss of the temporary base unit in the stack follows the same scenario as indicated in the previous section for release 6.2 and above. The base unit remains in control of the stack.

3.3.9.4 Loss of Temporary Base Unit in a Stack (rls 6.1 and below)

The loss of the temporary base unit in the stack (typically unit #2) follows the same scenario as indicated in the previous section for software release 6.1 and below. The base unit remains in control of the stack.

When the replacement temporary base unit (unit #2) is installed, it is recommended that you perform the "Replace Switch" procedure on the licensing portal to substitute the new unit's MAC address in the existing license file and re-upload that file to the switch/stack.

3.3.10 Adding a Unit to a Stack (all releases)

When a unit is added to an existing stack, there is no change required to the Advanced License file for that stack. Since the stack already exists, the license file for that stack already contains either just the base unit MAC address (s/w release 6.2), or the base unit and temporary base unit MAC addresses (s/w release v6.1 and below) and will extend licensed features to the new unit(s).

3.3.10.1 Adding a Unit to a Switch to Create a Stack (rls 6.2 & above)

When a license file is generated for a switch, only the base MAC address of that switch is required to be entered in the Avaya licensing portal when creating the license file. When a second unit is added to create a switch stack, LAUR will create a virtual license key for the stack and extend licensed features to the new unit.

3.3.10.2 Adding a Unit to a Switch to Create a Stack (rls 6.1 and below)

When a license file is generated for a switch, only the MAC address of the switch would have been entered in the Avaya licensing portal to create the license file. If at a later date, a second switch is added to create a stack, go back to the licensing portal and add the new switch (unit #2) MAC address to the existing license file. Once this is done, install the new license file on the stack and reboot. For software

releases 6.1 and below, having the base unit and temp base unit (unit #2) MAC addresses in the license file provides license redundancy in the event of a base unit failure.

3.3.10.3 Upgrading from Release 5.x to 6.x with Advanced License

License files are not software version specific. However when upgrading an existing 5000 series switch (or stack) with an advanced license installed from release v5.x to v6.0 and PIM-SM support is required, you must access the Avaya electronic licensing portal and re-download and re-install the advanced license file to activate PIM-SM support.

This step is required for 5000 series Advanced license files generated before November 2008. Existing 5000 Advanced license files in the Avaya electronic licensing portal database were automatically updated just prior to software release v6.0.

It is not necessary to consume another license within the License Bank by generating a new license file. Simply locate the corresponding Advanced license file for the switch (or stack) in question, and download it directly by clicking on the “Download” button in the transaction table within the License Bank Details screen. Remove the existing license from the corresponding switch (or stack) using the *clear license* ACLI command, then TFTP the license file re-downloaded onto the switch (or switch stack). Once the updated license file is installed, reboot the switch.

This task can be performed before or after the software upgrade to v6.0.

With the new / updated license file installed and v6.x code running on the ERS5500, PM-SIM can now be globally enabled.

3.3.10.4 30 Day Trial License

A trial license can be obtained to try out Advanced or Premier license features for 30 days. This trial license is posted on the Avaya support web site at www.avaya.com/support with the related software images. Trial licenses are obtained from Avaya and installed using ACLI or Enterprise Device Manager. After the trial period has expired the licensed feature is disabled.

3.4 Ethernet Routing Switch 8300

The Avaya Ethernet Routing Switch 8300 is a uniquely versatile modular LAN Switch perfectly suitable for use in both the network core and edge. Supporting Avaya's proven Switch Clustering technology for always-on application availability, the ERS 8300 is the platform of choice for the mid-sized Enterprise. In addition, it boasts a complete suite of convergence- and security-friendly features optimized for the wiring closet. Delivering real-world Layer 2 and Layer 3 traffic performance, flexible connectivity options, high density interfaces, and standards-based Power-over-Ethernet - it is the solution for Enterprises seeking to enhance & extend the intelligence of their network.

3.4.1 Licensing

The Avaya Ethernet Routing Switch 8300 series switches release 4.2 and above support the following licensing levels:

Base	Advanced (AD)	Premier (PR)
▪ Core Layer 2 Switching ▪ Local and static routing ▪ RIP routing ▪ QoS ▪ Security	▪ SMLT ▪ RSMLT ▪ OSPF ▪ iBGP-Lite ▪ ECMP ▪ VRRP ▪ SLPP ▪ PIM-SM ▪ Deep Packet Filtering	▪ Advanced features plus; ▪ VRF-Lite

Table 3.4.1 – Ethernet Routing Switch 8300 Licensing Levels

3.4.2 Base License

Each new ERS8300 chassis requires that a Base Software License Kit be purchased separately for every chassis, as the Base Software License is not automatically included with an ERS8300. The Base Software License provides core Layer 2 switching, QoS, basic IP routing and security functionality.

Table 3.5.2 provides the Base Software License order codes for the Ethernet Routing Switch 8300:

Order Code	Description
DS1421002-4.2	Ethernet Routing Switch 8300 Base Software License. Version 4.2.

Table 3.4.2 – Ethernet Routing Switch 8300 Base License Kits

3.4.3 Advanced License

If required, an Advanced license is purchased separately to the Base software license and unlocks additional features to the base features when an advanced license file is installed.

ERS8300 software release 4.2 (& above) requires an Advanced license to enable the following features:

- SMLT (Split Multilink Trunking)
- RSMLT (Routed Split Multilink Trunking)
- OSPF (Open Shortest Path First)
- iBGP-Lite (Border Gateway Protocol – Lite version)
- ECMP (Equal Cost Multi-path Protocol)
- VRRP (Virtual Routing Redundancy Protocol)
- SLPP (Simple Loop Prevention Protocol)
- PIM-SM (Protocol Independent Multicast - Sparse Mode)
- Deep Packet Filtering (Pattern Matching)

An Advanced License Kit is required for each Ethernet Routing Switch 8300 chassis and is available in kits of 1 and 10 licenses.

Table 3.5.3 provides a list of order codes of Advanced License kits which are available for the Ethernet Routing Switch 8300 series switches:

Order Code	Description
DS1421006	Ethernet Routing Switch 8300 Advanced License Kit, for 1 chassis. Enabled features: SMLT, RSMLT, OSPF, iBGP-Lite, ECMP, SLPP, VRRP, PIM-SM & Deep Packet Filtering. (one license required per chassis).
DS1421007	Ethernet Routing Switch 8300 Advanced License Kit, for up to 10 chassis. Enabled features: SMLT, RSMLT, OSPF, iBGP-Lite, ECMP, SLPP, VRRP, PIM-SM & Deep Packet Filtering. (one license required per chassis).

Table 3.4.3 – Ethernet Routing Switch 8300 Advanced License Kits

3.4.4 Premier License

If required, a Premier license is purchased separately to the Base software license and unlocks all possible features to the base features when a Premier license file is installed. If Premier licensed feature(s) are required, then it is not necessary to purchase an Advanced license. A Premier license will unlock both Advanced and Premier features (ALL features).

ERS8300 software release 4.2 (and above) requires a Premier License to enable the following features:

- Advanced features plus;
- VRF-Lite (Virtual Routing and Forwarding – Lite version)

A Premier License is required for each ERS8300 chassis and is available in kits of 1 and 10 licenses.

Table 3.5.4 provides a list of order codes of Premier License kits which are available for the Ethernet Routing Switch 8300 series switches:

Order Code	Description
DS1421010	Ethernet Routing Switch 8300 Premier License Kit, for 1 chassis. Enabled features: Advanced License features, plus VRF-Lite. (one license required per chassis).
DS1421011	Ethernet Routing Switch 8300 Premier License Kit, for up to 10 chassis. Enabled features: Advanced License features, plus VRF-Lite. (one license required per chassis).

Table 3.4.4 – Ethernet Routing Switch 8300 Premier License Kits

3.4.5 License Keying and Methodology

Licenses are based on the chassis base MAC address and a single license is required for each Ethernet Routing Switch 8300 chassis regardless of the number of Switch Fabric Modules installed.

To generate an Advanced / Premier license the chassis MAC address of the Ethernet Routing Switch 8300 series switch must be obtained and provided to http://www.avayadatalicensing.com before a license file activating the features can be generated. Once the license file has been obtained and installed on the Ethernet Routing Switch 8300, the advanced features will be enabled.

The base MAC address of an Ethernet Routing Switch 8300 series chassis may be obtained by ACLI using the following procedure:

Using ACLI, issue the *show sys-info* command:

```
ERS8300-1:5# show sys info

Chassis Info :

        Chassis     : 8310
        Serial#     : PED0064881
        HwRev       : 00
        NumSlots    : 10
        NumPorts    : 194
        BaseMacAddr : 00:0e:62:ce:00:00
        MacAddrCapacity : 4096
        Temperature : 29 C
        MgmtMacAddr : 00:0e:62:ce:03:f4
```

3.4.6 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download an Advanced or Premier license file.

1 Access the *License Bank* page where the Advanced or Premier License was deposited, select the Advanced or Premier *License Authorization Code* then click *Generate License*:

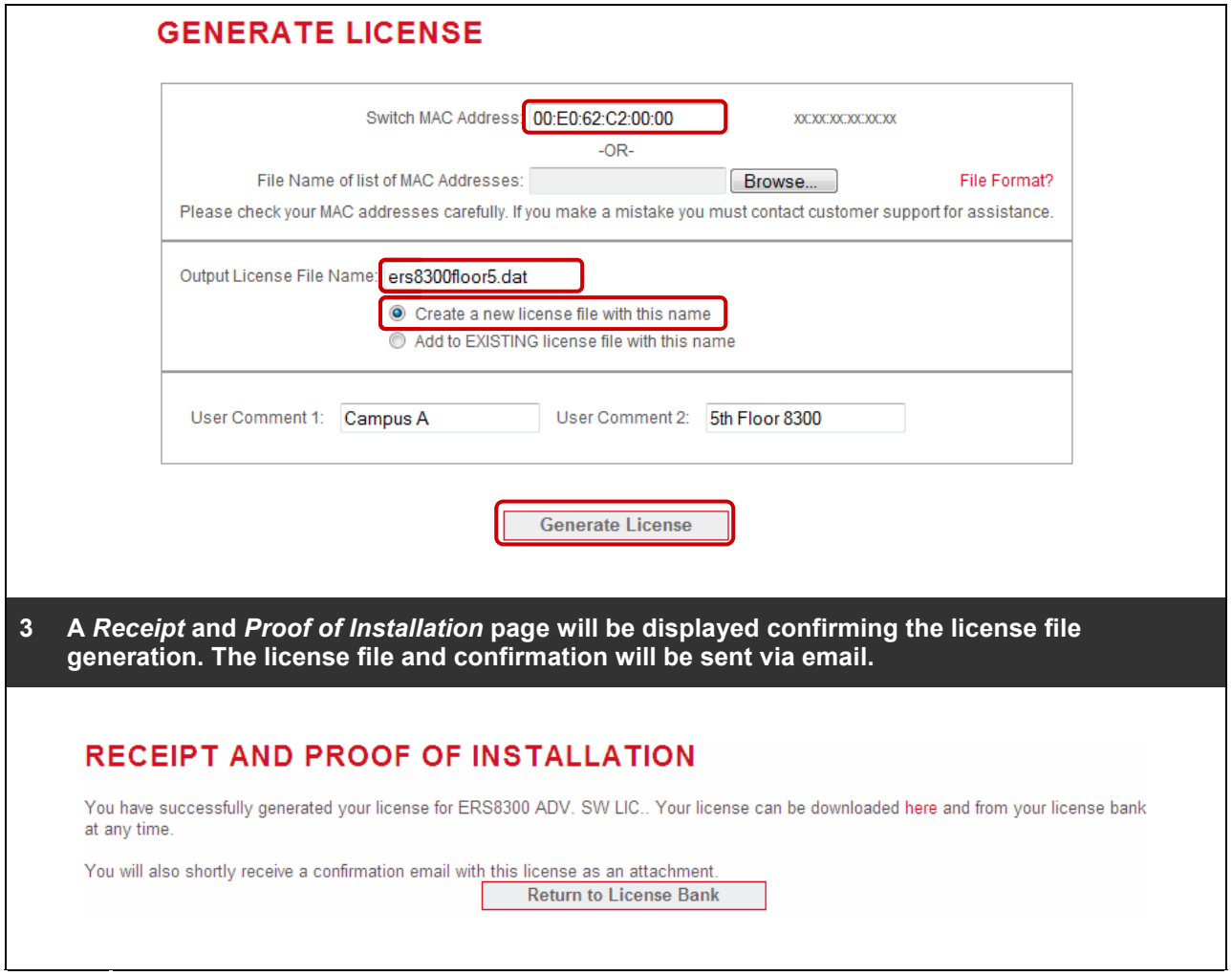
YOUR LICENSE BANK

License Bank: March 4, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

Switch MAC Address	Enter the base MAC address of the Ethernet Routing Switch 8300 chassis can be obtained using ***show sys-info*** ACLI command.
File Name of list of MAC Addresses	An ASCII file containing multiple Ethernet Routing Switch 8300 base MAC addresses which that allows a license file to be generated with multiple MACs in one transaction: ▪ One MAC address entry per line. ▪ MAC addresses must be capitalized with each pair of characters separated by colons (XX:XX:XX:XX:XX:XX).
Output License File Name	The name of the license file that will be emailed when the license is generated. ▪ Maximum of 63 alphanumeric characters. ▪ No spaces or special characters allowed. ▪ An underscore "_" is permitted. ▪ A period followed by a three letter extension is required.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.


GENERATE LICENSE
Switch MAC Address: 00:E0:62:C2:00:00
xx:xx:xx:xx:xx:xx
-OR-
File Name of list of MAC Addresses:
Browse...
File Format?
Please check your MAC addresses carefully. If you make a mistake you must contact customer support for assistance.
Output License File Name: ers8300floor5.dat
Create a new license file with this name
Add to EXISTING license file with this name
User Comment 1: Campus A
User Comment 2: 5th Floor 8300
Generate License

3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.

RECEIPT AND PROOF OF INSTALLATION
You have successfully generated your license for ERS8300 ADV. SW LIC.. Your license can be downloaded here and from your license bank at any time.
You will also shortly receive a confirmation email with this license as an attachment.
Return to License Bank

An Ethernet Routing Switch 8300 license file name can use any file name or extension, however, if the filename is NOT ***license.dat***, then the ***bootconfig*** choice parameter must be updated with the exact license filename and location.

The license file is a compressed binary file. It is important that when downloading or saving this file, that your browser does not automatically decompress this file or you will receive an error when adding the license to the switch.

3.4.7 License Installation

During the boot sequence, an Ethernet Routing Switch 8300 series switch first uses the bootconfig information for the license file name and location. If a license file is not specified or is not found, the switch will look for a default license file name of ***license.dat***. Licensed features will be unlocked and available for configuration when a valid license file is found.

The license filename must be in lower case when being copied to the Ethernet Routing Switch 8300 series switch.

An Avaya Ethernet Routing Switch 8300 license may be installed using the command line interface or Device Manager by performing one of the following procedures:

3.4.7.1 Avaya Command Line Interface (ACLI)

1 Using ACLI enable the *privExec* mode and access the *configuration* context to copy the license file to flash on the switch:

```
ERS8300-1:5(config)# copy 192.168.40.100:ers8300floor5.dat /flash/license.dat
```

After the license file has been successfully uploaded, you will need to reboot the ERS8300 switch for the licensed features to be activated.

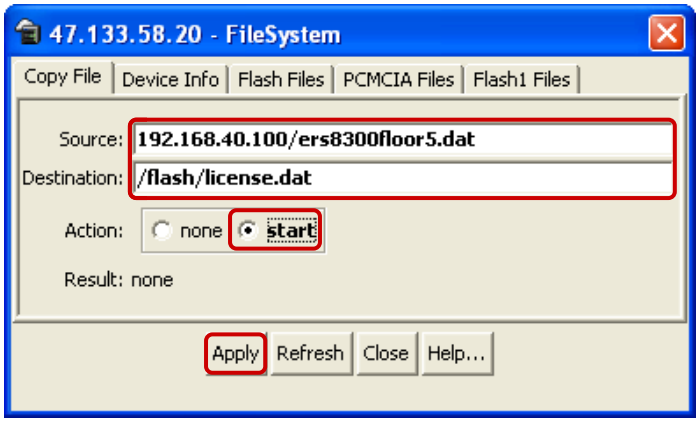
Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

Ensure the license filename uses lower case characters when being copied and issue a ***save config*** command to save the system configuration.

3.4.7.2 Avaya Device Manager (DM)

1 Open the switch in Device Manager then select the Master SF/CPU module. In the main menu select *Edit* then *FileSystem*. Enter tftp server IP address & source filename in the *Source* field, then destination location and license file name in the *Destination* field. Click *Apply*:



After the license file has been successfully uploaded, you will need to reboot the ERS8300 switch for the licensed features to be activated.

Installed licenses may be viewed in the CLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.4.8 License Configuration

3.4.8.1 Avaya Command Line Interface

To update the license file name and path information using ACLI (this is not necessary if the license file name is ***license.dat*** and is located in the ***/flash directory***):

1 Using ACLI enable the *privExec* mode and access the *configuration* context then issue the *bootconfig choice <boot-choice> license-file <file>* command specify the source of the license file:

```
ERS8300-1:5(config)# bootconfig choice primary license-file /flash/ers8300floor5.dat
```

Choice <boot-choice>	Specifies the order in which the specified boot path is accessed when the switch is rebooted: ▪ primary ▪ secondary ▪ tertiary
license-file <file>	The source can be Flash, PCMCIA, or a remote TFTP server: ▪ /flash/<file_name> ▪ /pcmcia/<file_name> ▪ <a.b.c.d>:<file_name>

After the license file has been successfully uploaded, you will need to reboot the ERS8300 switch for the licensed features to be activated.

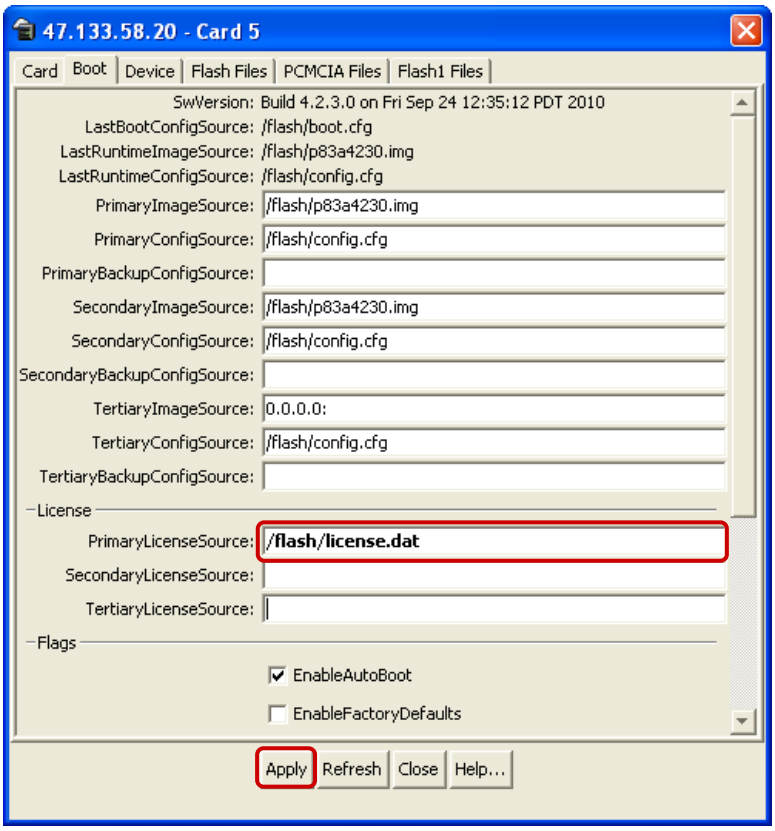
Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.4.8.2 Avaya Device Manager

To update the license file name and path information using Device Manager (this is not necessary if the license file name is ***license.dat*** and is located in the ***/flash directory***):

1 In Device Manager open the switch and select the master switch fabric. In the main menu select *Edit* then *Card*. Select the *Boot* tab and in the *PrimaryLicenseSource* field enter the path and name of the license file. Click *Apply*:



After the license file has been successfully uploaded, you will need to reboot the ERS8300 switch for the licensed features to be activated.

Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.4.9 Replacing a Chassis

In the event of a switch failure, licenses may be transferred between Ethernet Routing Switch 8300 series switch chassis using the following procedure:

1 Access the *License Bank* page where the Advanced or Priemier license was deposited. Locate the Advanced or Premier license for the Ethernet Routing Switch 8300 to be transferred then click *Details*:

YOUR LICENSE BANK

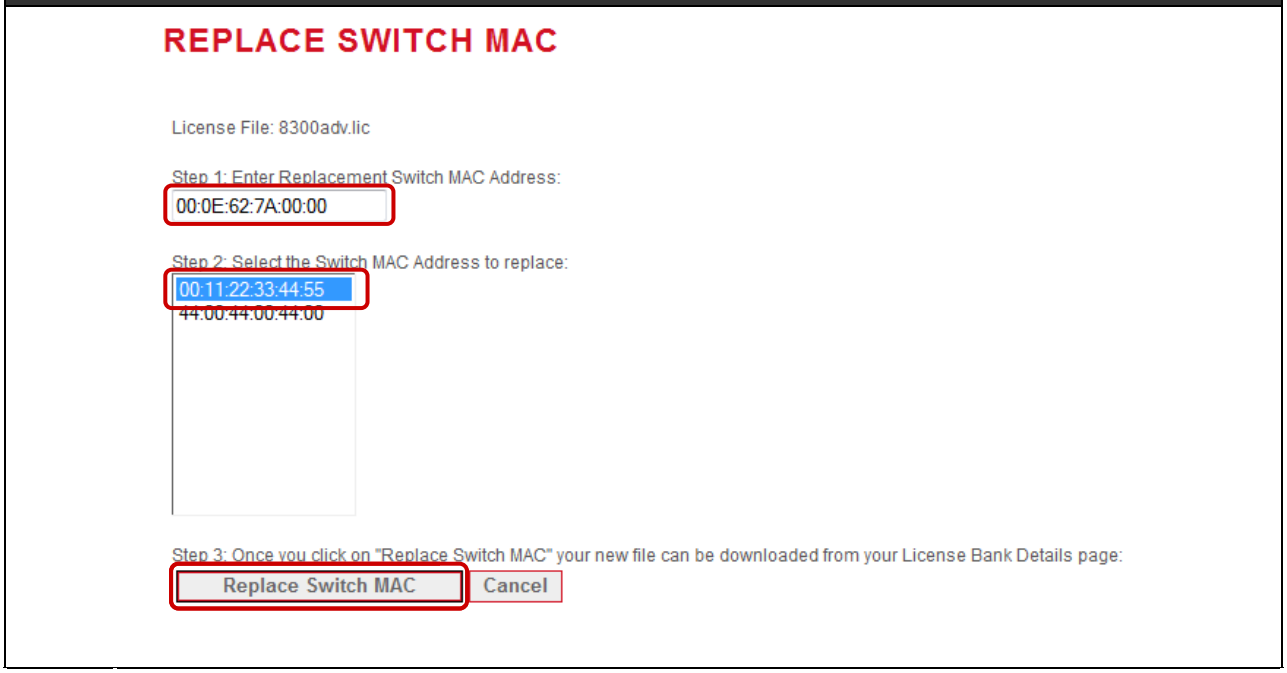
License Bank: March 4, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS4500 Advanced LIC for 10 Switches	AL4516002	[redacted]	YQK2226EP PMQABSK32	[redacted]	2010-09-23	See Details	10	1 Details	9 Generate License
ERS5000 Advanced LIC. (50 Switches/Stacks)	AL1016003	[redacted]	5RX3226ND KZJJHAB52	[redacted]	2008-06-10	See Details	100	37 Details	63 Generate License
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	B6T2226NM HSSJHAU52	[redacted]	2008-03-07	See Details	50	47 Details	3 Generate License

2 In the *License Bank Details* page locate the license for the Ethernet Routing Switch 8300 to be transferred then click *Replace Switch*:

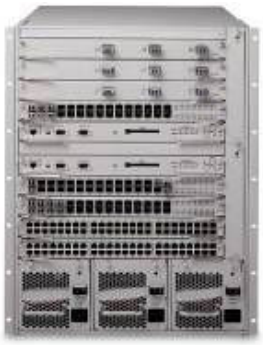
Product	ERS8300 Advanced LIC. (10 Chassis)
Order Code	DS1421007
License Authorization Code	[redacted]
Transaction ID	B3W2222ASVJPJ9J322-1
Licensee	[redacted]
License Emailed To	[redacted]
License Generation Date	2008-02-01
License Type	GENLIC
License or License File	8300adv.lic Replace Switch Download
MACs	8300adv.lic.macs
Comment 1	
Comment 2	

3 In the *Replace Switch MAC* page, enter the *Replacement Switch MAC Address* then select the *Switch MAC address to replace*. Click *Replace Switch MAC*:


REPLACE SWITCH MAC
License File: 8300adv.lic
Step 1: Enter Replacement Switch MAC Address:
00:0E:62:7A:00:00
Step 2: Select the Switch MAC Address to replace:
00:11:22:33:44:55
44:00:44:00:44:00
Step 3: Once you click on "Replace Switch MAC" your new file can be downloaded from your License Bank Details page:
Replace Switch MAC
Cancel

If you have multiple entries for the same license type, you will have to systematically check the LAC entry by clicking on the Details button and looking at the license file name in the transaction entries.

3.5 Ethernet Routing Switch 8600 / 8800



The Avaya Ethernet Routing Switch 8600/8800 is a versatile modular LAN Switch positioned for use as a high performance switch for the network core. Supporting Avaya's proven Switch Clustering technology for always-on application availability; the ERS 8600/8800 is the platform of choice for the mid to large sized Enterprise and also Service Provider environments. In addition, it boasts a complete suite of features including network virtualization ensuring that it also is optimized for the network core. Delivering real-world Layer 2, 3 through Layer 7 functionality with high traffic performance, flexible connectivity options, high-density interfaces, it is the solution for Enterprises seeking to enhance the intelligence of their business-class network.

3.5.1 Licensing

The Avaya Ethernet Routing Switch 8600/8800 series switches release 7.1 and above support the following licensing levels:

Base (BA)	Advanced (AD)	Premier (PR)
▪ Core Layer 2 Switching, MLT, DMLT, SMLT, SLT ▪ IP Multinetting ▪ IP Source Guard ▪ DHCP Snooping ▪ Dynamic ARP Inspection ▪ BPDU Filtering ▪ IGMP Querier for L2 ▪ PIM-SSM for SMLT ▪ Multicast VLAN Registration	▪ BGP4 (>10 peers) ▪ Bidirectional Forwarding Detection ▪ Multicast Source Discovery (MSDP) ▪ Packet Capture function (PCAP) ▪ IPv6 Routing ▪ IPv6 over SMLT and RSMLT ▪ DHCPv6 Relay ▪ VRRPv3 ▪ BGP+ ▪ RADIUSv6	▪ Advanced features plus; ▪ VRF-Lite ▪ Mulicast Virtualization for VRF-Lite (IGMP & PIM-SM / SSM) ▪ Multi-Protocol Border Gateway Protocol (MP-BGP) ▪ IP-VPN MPLS (RFC2547) ▪ IP-VPN-Lite (IP-in-IP) ▪ SPB L2 VSNs (VLAN Ext.) ▪ SPB Native IP shortcuts (VRF0 shortcuts) ▪ SPB L3 VSN (VRF extensions) ▪ IP VPN Lite over SPB IP Shortcuts ▪ InterISID Routing ▪ IEEE 802.1ag Connectivity Fault Management

Table 3.5.1 – Ethernet Routing Switch 8600/8800 Licensing Levels

3.5.2 Base License

Each new ERS8600/8800 chassis requires that a Base Software License Kit be purchased separately for every chassis, as the Base Software License is not automatically included with an ERS8600/8800.

The Base Software License provides core Layer 2 switching, MLT, Distributed MLT, SMLT, SLT, QoS, RIPv1/v2, OSPF & BGPv4 (up to 10 peers) IP routing, IPFIX and security functionality.

Table 3.6.2 provides the Base Software License order codes for the Ethernet Routing Switch 8600/8800:

Order Code	Description
DS1410003-5.1	Ethernet Routing Switch 8600 Routing Switch Base Software Kit (Includes v5.1 SW license, Device Manager, and complete SW documentation set). One license kit required per chassis. (Support contracts must be purchased separately.) Version 5.1.
DS1410003-7.1	Ethernet Routing Switch 8800 Software Kit (Includes v7.1 SW license and complete SW documentation set on CD). One license kit required per chassis. (Support contracts must be purchased separately.) Version 7.1.

Table 3.5.2 – Ethernet Routing Switch 8600/8800 Base License Kits

3.5.3 Advanced License

If required, an Advanced license is purchased separately to the Base software license and unlocks additional features to the base features when an advanced license file is installed.

ERS8600/8800 series software release 5.1 with an Advanced license enables the following features:

- BGPv4 (Border Gateway Protocol version 4, for more than 10 peers)
- IPv6 Routing (Internet Protocol version 6)
- BFD (Bidirectional Forwarding Detection)
- MSDP (Multicast Source Discovery Protocol)
- PCAP (Packet Capture)

ERS8800 series software release 7.1 with an Advanced license enables the following features:

- BGPv4 (Border Gateway Protocol version 4, for more than 10 peers)
- BFD (Bidirectional Forwarding Detection)
- MSDP (Multicast Source Discovery Protocol)
- PCAP (Packet Capture)
- IP Routing
- IPv6 over SMLT and RSMLT
- DHCPv6 Relay
- VRRPv3
- BGP+
- RADIUSv6

An Advanced License is required for each ERS8600/8800 chassis and is available in kits of 1 and 10 licenses.

Table 3.6.3 provides a list of order codes of Advanced License kits which are available for the Ethernet Routing Switch 8600/8800 series switches:

Order Code	Description
DS1410021	Ethernet Routing Switch 8600 Advanced License Kit, for 1 chassis. Enabled features: BGP4, IPv6 Routing, BFD, MSDP and PCAP. (one license required per chassis).
DS1410022	Ethernet Routing Switch 8600 Advanced License Kit, for up to 10 chassis. Enabled features: BGP4, IPv6 Routing, BFD, MSDP and PCAP. (one license required per chassis).

Table 3.5.3 – Ethernet Routing Switch 8600/8800 Advanced License Kits

3.5.4 Premier License

If required, a Premier license is purchased separately to the Base software license and unlocks all possible features to the base features when a Premier license file is installed. If Premier licensed feature(s) are required, then it is not necessary to purchase an Advanced license. A Premier license will unlock both Advanced and Premier features (ALL features).

ERS8600 series software release 5.1 with a Premier license enables Advanced license features plus:

- VRF-Lite (Virtual Routing and Forwarding – Lite version)
- MP-BGP (Multi-Protocol Border Gateway Protocol)
- IP-VPN MPLS RFC2547 (IP-Virtual Private Network, Multi-Protocol Label Switching RFC2547)
- IP-VPN-Lite (IP-in-IP) (IP-Virtual Private Network-Lite)
- Multicast Virtualization for VRF-Lite (IGMP and PIM-SM / SSM)

ERS 8800 series software release 7.1 with a Premier license enables the Advanced license features plus:

- VRF-Lite (Virtual Routing and Forwarding – Lite version)
- Multicast Virtualization for VRF-Lite (IGMP and PIM-SM / SSM)
- MP-BGP (Multi-Protocol Border Gateway Protocol)
- IP-VPN MPLS RFC2547 (IP-Virtual Private Network, Multi-Protocol Label Switching RFC2547)
- IP-VPN-Lite (IP-in-IP) (IP-Virtual Private Network-Lite)
- SPB L2 VSNs (VLAN Ext.)
- SPB Native IP shortcuts (VRF0 shortcuts)
- SPB L3 VSN (VRF extensions)
- IP VPN Lite over SPB IP Shortcuts
- InterISID Routing
- IEEE 802.1ag Connectivity Fault Management

A Premier License is required for each ERS8600/8800 chassis and is available in kits of 1 and 10 licenses.

Table 3.6.4 provides a list of order codes of Premier License kits which are available for the Ethernet Routing Switch 8600/8800 series switches:

Order Code	Description
DS1410026	Ethernet Routing Switch 8600 Premier License kit, for 1 Chassis. Enabled features: Advanced License features, plus, VRF-Lite, MP-BGP, IP-VPN MPLS RFC2547, IP-VPN-Lite (IP-in-IP) & MCast Virtualization for VRF-Lite. (one license required per chassis).
DS1410027	Ethernet Routing Switch 8600 Premier License Kit, for up to 10 chassis. Enabled features: Advanced License features, plus, VRF-Lite, MP-BGP, IP-VPN MPLS RFC2547, IP-VPN-Lite (IP-in-IP) & MCast Virtualization for VRF-Lite. (one license required per chassis).

Table 3.5.4 – Ethernet Routing Switch 8600/8800 Premier License Kits

3.5.5 License Keying and Methodology

Licenses are based on the chassis base MAC address and a single license is required for each Ethernet Routing Switch 8600/8800 chassis regardless of the number of Switch Fabric Modules installed.

To generate an Advanced or Premier license file, the chassis MAC address of the Ethernet Routing Switch 8600/8800 series switch must be obtained and provided to http://www.avayadatalicensing.com before a license file activating the features can be generated. Once the license file has been obtained and installed on the Ethernet Routing Switch 8600/8800, licensed features will be enabled.

The base MAC address of an Ethernet Routing Switch 8600/8800 series chassis may be obtained by ACLI using the following procedure:

Using ACLI, issue the *show sys-info* command:

```
ERS8600-1:5# show sys info

Chassis Info :
        Chassis     : 8010
        Serial#     : PED0063977
        HwRev       : A
        NumSlots          : 10
        NumPorts          : 102
       GlobalFilter       : enable
       VlanBySrcMac       : disable
       ForceTopologyIpFlag: false
       Ecn-Compatib       : enable
       WsmDirectMode      : disable
       max-vlan-resource-resevation : (disable) -> (disable)
       multicast-resource-reservartion : (2048) -> (2048)
      BaseMacAddr : 00:04:dc:7d:64:00
```

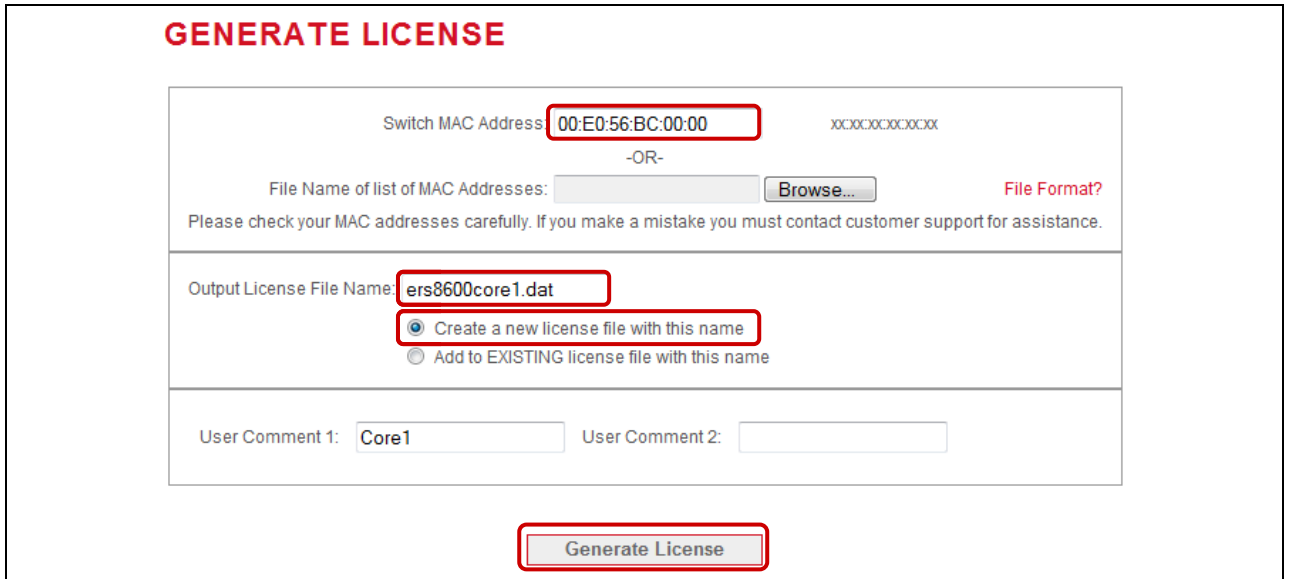
3.5.6 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download an Advanced or Premier license file.

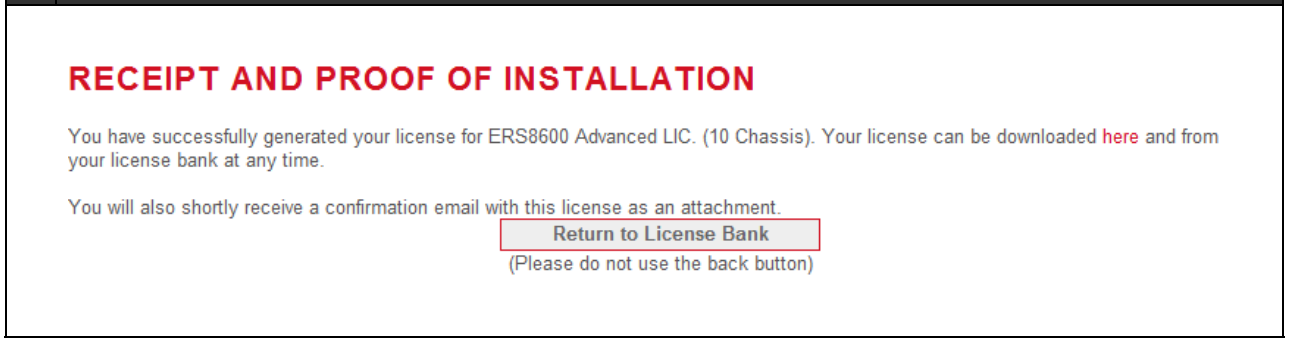
1 Access the *License Bank* page where the Advanced or Premier License was deposited, select the Advanced or Premier *License Authorization Code* then click *Generate License*:

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

Switch MAC Address	Enter the base MAC address of the Ethernet Routing Switch 8600/8800 chassis can be obtained using ***show sys info*** ACLI command.
File Name of list of MAC Addresses	An ASCII file containing multiple Ethernet Routing Switch 8600/8800 base MAC addresses which that allows a license file to be generated with multiple MACs in one transaction: ▪ One MAC address entry per line. ▪ MAC addresses must be capitalized with each pair of characters separated by colons (XX:XX:XX:XX:XX:XX).
Output License File Name	The name of the license file that will be emailed when the license is generated. ▪ Maximum of 63 alphanumeric characters. ▪ No spaces or special characters allowed. ▪ An underscore "_" is permitted. ▪ A period followed by a three letter extension is required.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.


GENERATE LICENSE
Switch MAC Address: 00:E0:56:BC:00:00
xx:xx:xx:xx:xx:xx
-OR-
File Name of list of MAC Addresses:
Browse...
File Format?
Please check your MAC addresses carefully. If you make a mistake you must contact customer support for assistance.
Output License File Name: ers8600core1.dat
Create a new license file with this name
Add to EXISTING license file with this name
User Comment 1: Core1
User Comment 2:
Generate License

3 **A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.**


RECEIPT AND PROOF OF INSTALLATION
You have successfully generated your license for ERS8600 Advanced LIC. (10 Chassis). Your license can be downloaded here and from your license bank at any time.
You will also shortly receive a confirmation email with this license as an attachment.
Return to License Bank
(Please do not use the back button)

An Ethernet Routing Switch 8600/8800 license file name can use any file name or extension, however, if the filename is NOT ***license.dat***, then the ***bootconfig*** choice parameter must be updated with the exact license filename and location.

The license file is a compressed binary file. It is important that when downloading or saving this file, that your browser does not automatically decompress this file or you will receive an error when adding the license to the switch.

3.5.7 License Installation

During the boot sequence, an Ethernet Routing Switch 8600/8800 series switch first uses the bootconfig information for the license file name and location. If a license file is not specified or is not found, the switch will look for a default license file name of ***license.dat***. Licensed features will be unlocked and available for configuration when a valid license file is found.

The license filename must be in lower case when being copied to an Ethernet Routing Switch 8600/8800 series switch.

An Avaya Ethernet Routing Switch 8600/8800 license may be installed using the command line interface or Enterprise Device Manager by performing one of the following procedures:

3.5.7.1 Avaya Command Line Interface (ACLI)

1 Using ACLI enable the *privExec* mode and access the *configuration* context to copy the license file to flash on the switch:

```
ERS8600-1:5(config)# copy 192.168.40.100:ers8600core1.dat /flash/license.dat
```

After the license file has been successfully uploaded, you can issue the ***load-license*** command from CLI to activate licensed features immediately on an ERS8600/8800 switch, or, you can reboot the switch to activate licensed features.

NOTE: An ERS8600/8800 license file name must use lower case characters in the filename.

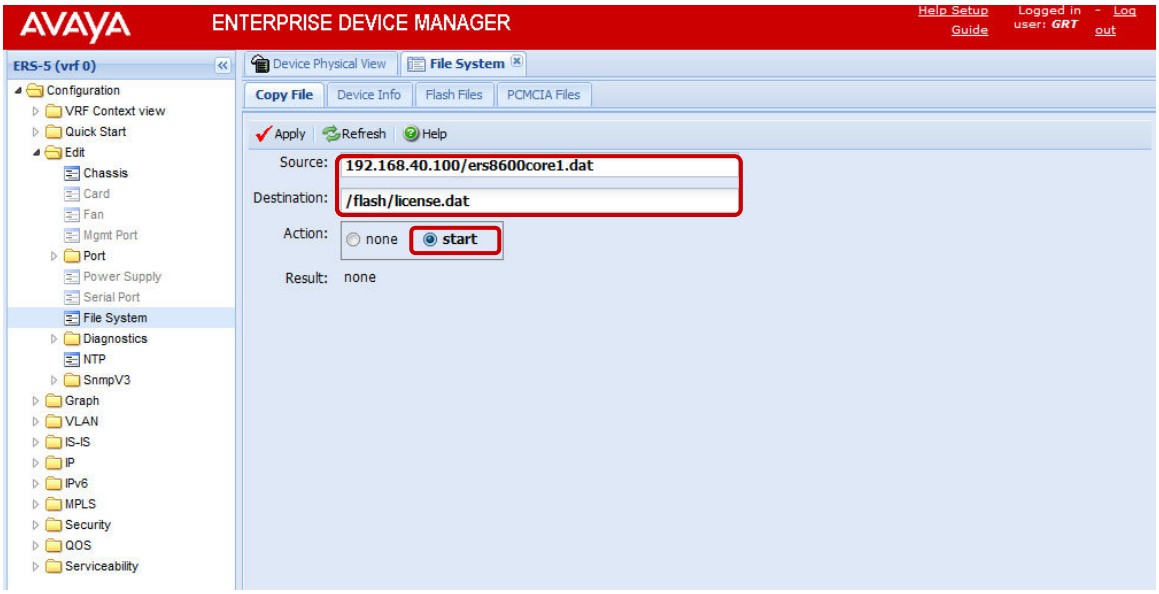
Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

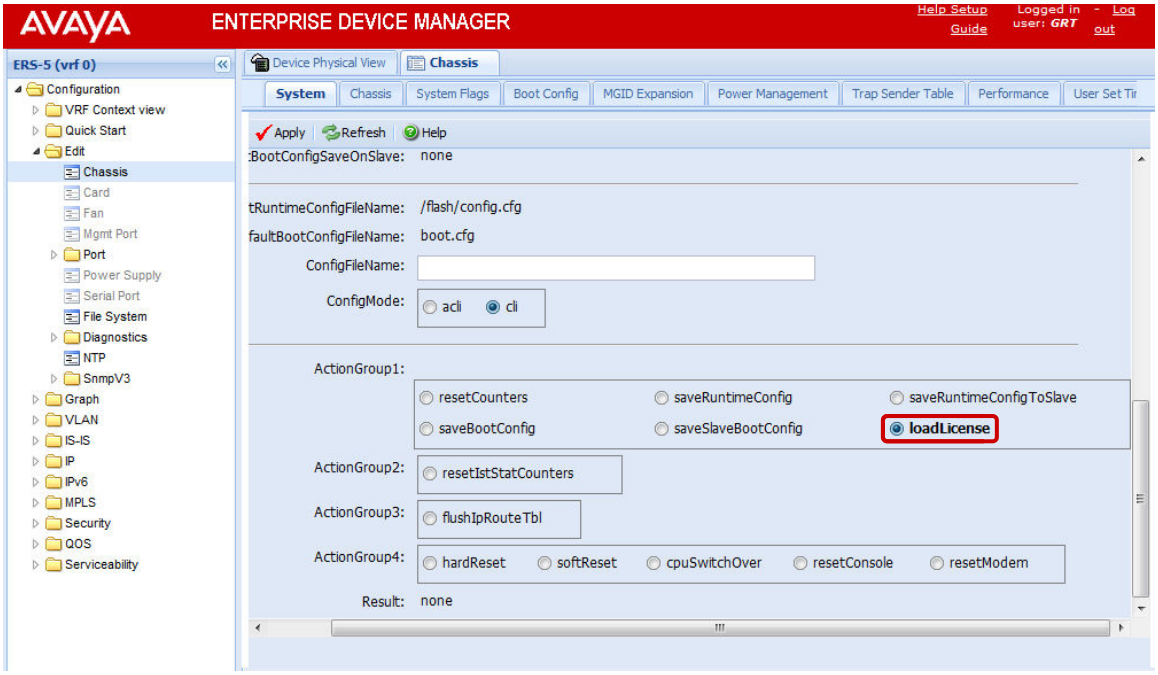
Ensure the license filename uses lower case characters when being copied and issue a ***save config*** command to save the system configuration.

3.5.7.2 Avaya Enterprise Device Manager (EDM)

1	In EDM select *Edit* then *File System*. In the *Source* field enter the TFTP server IP address, path and license file name. In the *Destination* field enter */flash/license.dat*. Select *start* then click *Apply*:



2	In EDM select *Edit* then *Chassis*. In *ActionGroup1* select *loadLicense* then click *Apply*:



After the license file has been successfully uploaded, you can issue the ***load-license*** command from CLI to activate licensed features immediately on an ERS8600/8800 switch, or, you can reboot the switch to activate licensed features.

NOTE: An ERS8600/8800 license file name must use lower case characters in the filename.

Installed licenses may be viewed in the CLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.5.8 License Configuration

3.5.8.1 Avaya Command Line Interface

To update the license file name and path information using ACLI (this is not necessary if the license file name is ***license.dat*** and is located in the ***/flash directory***):

1 Using ACLI enable the *privExec* mode and access the *configuration* context then issue the *bootconfig choice <boot-choice> license-file <file>* command specify the source of the license file:

```
ERS8600-1:5(config)# bootconfig choice primary license-file /flash/ers8600core1.dat
```

Choice <boot-choice>	Specifies the order in which the specified boot path is accessed when the switch is rebooted: ▪ primary ▪ secondary ▪ tertiary
license-file <file>	The source can be Flash, PCMCIA, or a remote TFTP server: ▪ /flash/<file_name> ▪ /pcmcia/<file_name> ▪ <a.b.c.d>:<file_name>

After the license file has been successfully uploaded, you can issue the ***load-license*** command from CLI to activate licensed features immediately on an ERS8600/8800 switch, or, you can reboot the switch to activate licensed features.

NOTE: An ERS8600/8800 license file name must use lower case characters in the filename.

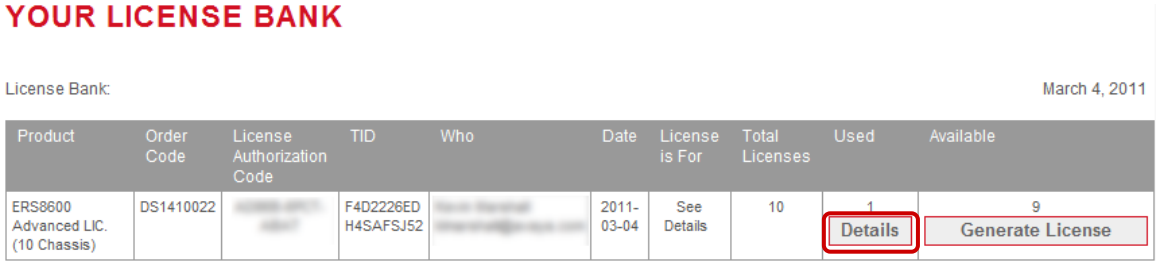
Installed licenses may be viewed in the ACLI by issuing the ***show license all*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

3.5.9 Replacing a Chassis

In the event of a switch failure, licenses may be transferred between Ethernet Routing Switch 8600/8800 series switch chassis using the following procedure:

1 Access the *License Bank* page where the Advanced or Premier license was deposited. Locate the Advanced or Premier license for the Ethernet Routing Switch 8600 to be transferred then click *Details*:

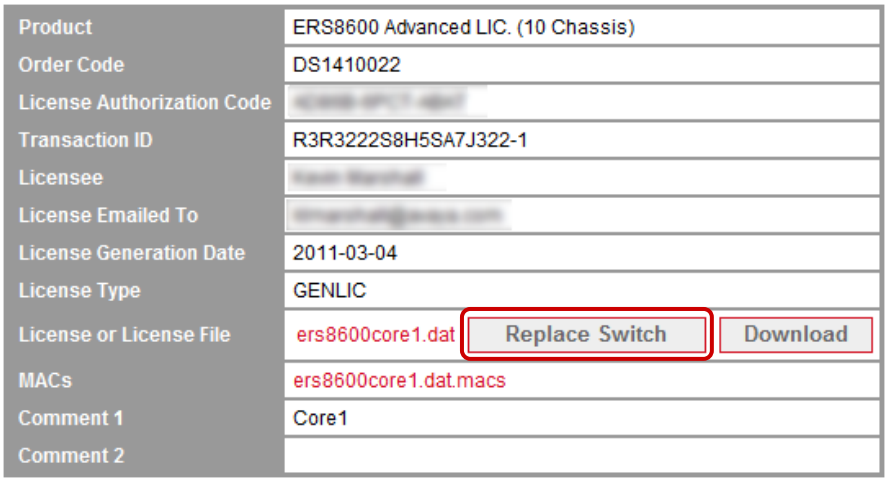


YOUR LICENSE BANK

License Bank: March 4, 2011

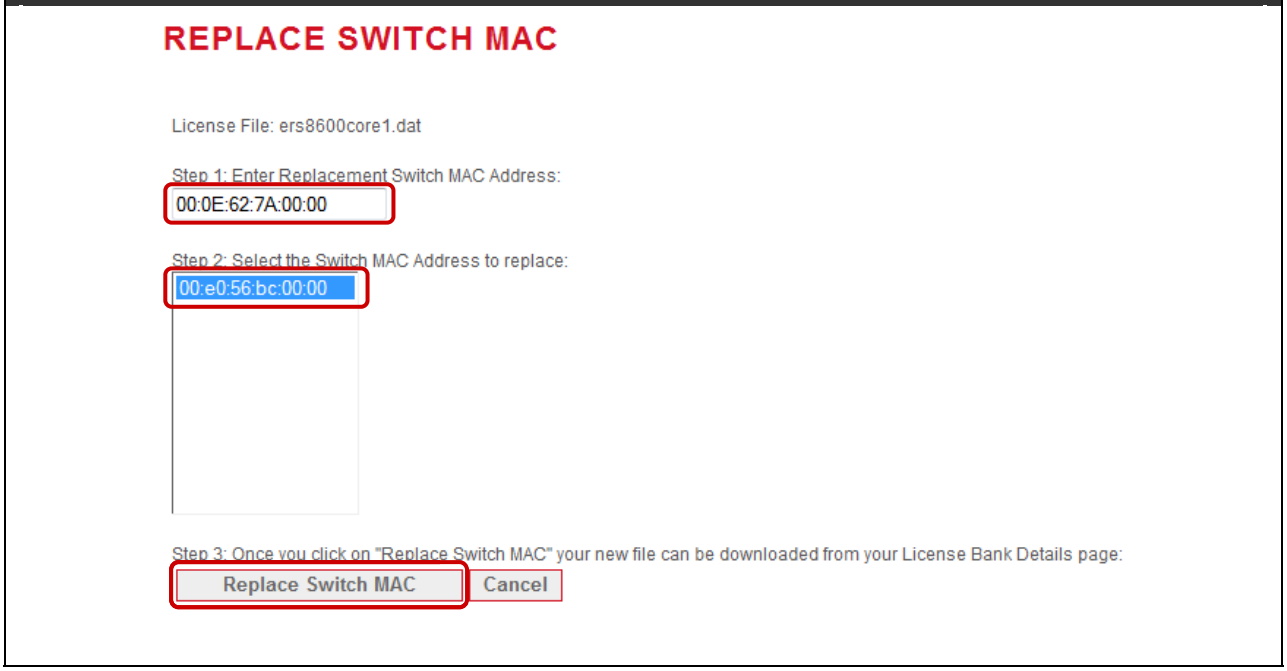
Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS8600 Advanced LIC. (10 Chassis)	DS1410022	[redacted]	F4D2226ED H4SAFSJ52	[redacted]	2011-03-04	See Details	10	1 Details	9 Generate License

2 In the *License Bank Details* page locate the license for the Ethernet Routing Switch 8600 to be transferred then click *Replace Switch*:



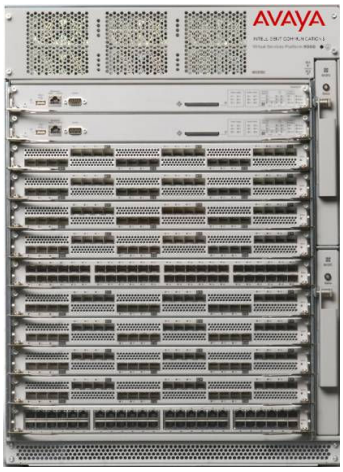
Product	ERS8600 Advanced LIC. (10 Chassis)
Order Code	DS1410022
License Authorization Code	[redacted]
Transaction ID	R3R3222S8H5SA7J322-1
Licensee	[redacted]
License Emailed To	[redacted]
License Generation Date	2011-03-04
License Type	GENLIC
License or License File	ers8600core1.dat Replace Switch Download
MACs	ers8600core1.dat.macs
Comment 1	Core1
Comment 2	

3 In the *Replace Switch MAC* page, enter the *Replacement Switch MAC Address* then select the *Switch MAC address to replace*. Click *Replace Switch MAC*:


REPLACE SWITCH MAC
License File: ers8600core1.dat
Step 1: Enter Replacement Switch MAC Address:
00:0E:62:7A:00:00
Step 2: Select the Switch MAC Address to replace:
00:e0:56:bc:00:00
Step 3: Once you click on "Replace Switch MAC" your new file can be downloaded from your License Bank Details page:
Replace Switch MAC
Cancel

If you have multiple entries for the same license type, you will have to systematically check the LAC entry by clicking on the Details button and looking at the license file name in the transaction entries.

3.6 Virtual Services Platform 9000



Avaya's Virtual Services Platform 9000 (VSP 9000) is a next-generation solution for mission-critical data centers and campus core networks, designed for the needs of large enterprises, and other such as multi-tenant operators. The VSP 9000 rises to meet customer requirements for a future-proof, ultra-reliable network that easily and cost-effectively facilitates services integration; it provides a less complex, more agile virtual network infrastructure. It simplifies the network and helps reduce the cost of deploying new services; the VSP 9000 enables the building of a dynamic data center, delivering 24x7 uninterrupted access to enterprise applications and services.

The VSP 9000 delivers industry-leading performance and scalability, supporting very high-density 1 and 10 Gigabit Ethernet, and future-ready for 40 and 100 Gigabit Ethernet. The fully scalable architecture helps ensure that network capacity seamlessly scales with performance requirements, without complex or expensive re-engineering.

3.6.1 Licensing

The Avaya VSP9000 software release 3.3 supports the following licensing levels and features:

Base	Advanced	Premier
▪ Core Layer 2 Switching, ACLs, policers, shapers, 802.1D/w/s, 802.1p/Q ▪ MLT/LACP/SMLT/RSMLT/SLT ▪ Core Layer 3 routing & switching (IGMP, PIM, RIPv1/v2, OSPF) ▪ VRRP, SLPP, IPv6 Mgt, DoS protection	▪ Base features plus: ▪ BGP4 (16 peers / 64k IP Routes) ▪ IP Remote Monitoring ▪ Packet Capture function (PCAP) ▪ IPv6 Routing	▪ Advanced features plus: ▪ 500k IP Routes data plane ▪ 1.5M IPv4 Routes control plane ▪ 256BGP peers ▪ VRF ▪ SPB L2 VSNs ▪ SPB L3 VSNs ▪ SPB InterISID Routing ▪ SPB IP Shortcuts ▪ SPB: 802.1ag CFM

Table 3.6.1-1 – Virtual Services Platform 9000 Licensing Levels (Release 3.3)

The Avaya VSP9000 software release 3.4 will support the following licensing levels and features:

Base	Advanced	Premier
▪ Core Layer 2 Switching, ACLs, policers, shapers, 802.1D/w/s, 802.1p/Q ▪ MLT/LACP/SMLT/RSMLT/SLT ▪ Core Layer 3 routing & switching (IGMP, PIM, RIPv1/v2, OSPF) ▪ VRRP, SLPP, IPv6 Mgt, DoS protection	▪ Base features plus: ▪ BGP4 (16 peers / 64k IP Routes) ▪ IP Remote Monitoring ▪ Packet Capture function (PCAP) ▪ IPv6 Routing	▪ Advanced features plus: ▪ 500k IP Routes data plane ▪ 1.5M IPv4 Routes control plane ▪ 256BGP peers ▪ VRF ▪ SPB L2 VSNs ▪ SPB L3 VSNs ▪ SPB Inter-ISID Routing ▪ SPB IP Shortcuts ▪ SPB: 802.1ag CFM ▪ **SPB L2 VSN IGMP** ▪ **SPB L3 Multicast Routing**

Table 3.6.1-2 – Virtual Services Platform 9000 Licensing Levels (Release 3.4 - POR)

3.6.2 Base License

Each new VSP9000 series chassis requires that a Base Software License Kit be purchased separately for every chassis, as the Base Software License is not automatically included with a VSP9000.

The Base Software License provides core Layer 2 switching, MLT, Distributed MLT, SMLT, SLT, QoS, RIPv1/v2, OSPF & BGPv4 (up to 10 peers) IP routing, IPFIX and security functionality.

Table 3.7.2 provides the current Base Software License order code for the VSP 9000:

Order Code	Description
EC1410003-3.3	Virtual Services Platform 9000 Base Software Kit (Includes v3.2 Software License and complete documentation set). One License Kit required per Chassis. (Support Contracts sold separately.) Version 3.3.

Table 3.6.2 – Virtual Services Platform 9000 Base Software License Kit

3.6.3 Advanced License

If required, an Advanced license is purchased separately to the Base software license and unlocks additional features to the base features when an advanced license file is installed.

VSP 9000 series software release 3.2 requires an Advanced license to enable the following features:

- BGPv4 (Border Gateway Protocol version 4, for 16 peers / 64k IP Routes)
- PCAP (Packet Capture)
- Upto 4,000 configurable VLANs

- Link Aggregation: MLT/LACP/SMLT up to 512 groups of 8 links per group
- IPv6 Routing (Internet Protocol version 6)

Table 3.7.3 provides a list of order codes of Advanced License kits which are available for the Virtual Services Platform 9000:

Order Code	Description
EC1410010	Virtual Services Platform 9000 Advanced License Kit, for 1 chassis. Enabled features: BGP4 (16 peers / 64k IP Routes), PCAP and IPv6 Routing. (one license required per chassis).

Table 3.6.3 – Virtual Services Platform 9000 Advanced License Kit

3.6.4 Premier License

If required, a Premier license is purchased separately to the Base software license and unlocks all possible features to the base features when a Premier license file is installed. If Premier licensed feature(s) are required, then it is not necessary to purchase an Advanced license. A Premier license will unlock both Advanced and Premier features (ALL features).

VSP 9000 series Release 3.3 requires a Premier license to enable the following features:

Advanced Features plus;

- VRF (Virtual Routing and Forwarding)
- 500k IP Routes
- 256 BGP Peers
- Up to 16,000 configurable VLANs
- SPB L2 VSNs (Shortest Path Bridging, Layer 2 Virtual Service Networks)
- SPB L3 VSNs (Shortest Path Bridging, Layer 3 Virtual Service Networks)
- SPB Inter-ISID Routing (Shortest Path Bridging, Inter-Intermediate Service ID Routing)
- SPB IP Shortcuts (Shortest Path Bridging, Internet Protocol Shortcuts)
- SPB IEEE 802.1ag CFM (Shortest Path Bridging, 802.1ag Connectivity Fault Management)

Table 3.7.4 provides a list of order codes of Premier License kit which are available for the VSP9000:

Order Code	Description
EC1410015	Virtual Services Platform 9000 Premier License Kit, for 1 chassis. Enabled features: VRF, 500k IP Routes, 256 BGP Peers (one license required per chassis).

Table 3.6.4 – Virtual Services Platform 9000 Premier License Kit

3.6.5 License Keying and Methodology

Licenses are based on the chassis base MAC address and a single license is required for each Virtual Services Platform 9000 chassis regardless of the number of Switch Fabric Modules installed.

To generate an advanced / premier license the chassis MAC address of the Virtual Services Platform 9000 series switch must be obtained and provided to http://www.avayadatalicensing.com before a license file activating the features can be generated. Once the license file has been obtained and installed on the Virtual Services Platform 9000, the advanced features will be enabled.

The Base MAC address of a VSP9000 chassis may be obtained by ACLI using the following procedure:

Using ACLI, issue the *show sys-info* command:

```
VSP9000-1:1# show sys-info
```

```
Chassis Info:

        Chassis             : 9012
        Serial#             :
        H/W Revision        :
        H/W Config          :
        NumSlots            : 12
        NumPorts            : 194
        BaseMacAddr         : 00:24:7f:9e:00:00
        MacAddrCapacity     : 4096
        MgmtMacAddr         : 00:24:7f:9e:03:fd
        System MTU          : 1950
```

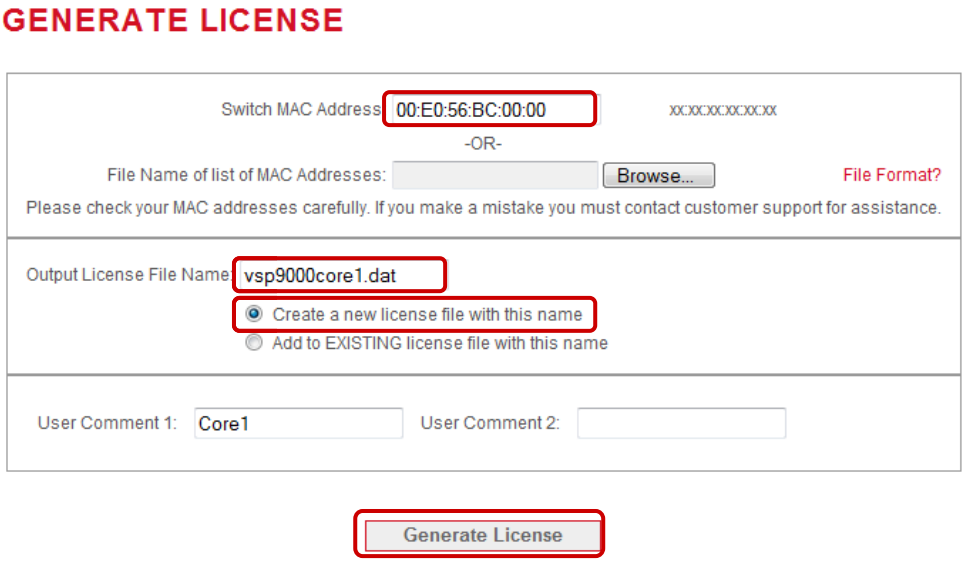
3.6.6 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download an Advanced or Premier license file.

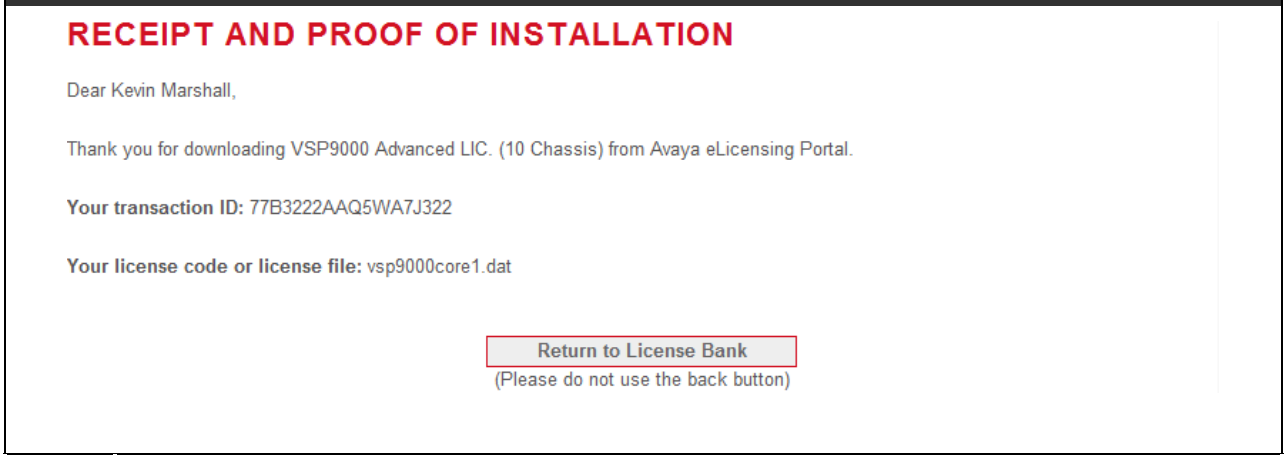
1 Access the *License Bank* page where the Advanced or Premier License was deposited, select the Advanced or Premier *License Authorization Code* then click *Generate License*:

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
VSP9000 Advanced LIC. (10 Chassis)	EC1410011	[redacted]	2532226E7 Q4WAFSJ52	[redacted]	2011-03-07		10	0	10 Generate License

2	In the *Generate License* page enter the required information to generate the license and then click *Generate License*:
Switch MAC Address	Enter the base MAC address of the Virtual Services Platform 9000 chassis can be obtained using ***show sys-info*** ACLI command.
File Name of list of MAC Addresses	An ASCII file containing multiple Virtual Services Platform 9000 base MAC addresses which that allows a license file to be generated with multiple MACs in one transaction: ▪ One MAC address entry per line. ▪ MAC addresses must be capitalized with each pair of characters separated by colons (XX:XX:XX:XX:XX:XX).
Output License File Name	The name of the license file that will be emailed when the license is generated. ▪ Maximum of 63 alphanumeric characters. ▪ No spaces or special characters allowed. ▪ An underscore "_" is permitted. ▪ A period followed by a three letter extension is required.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.



3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.



RECEIPT AND PROOF OF INSTALLATION

Dear Kevin Marshall,

Thank you for downloading VSP9000 Advanced LIC. (10 Chassis) from Avaya eLicensing Portal.

Your transaction ID: 77B3222AAQ5WA7J322

Your license code or license file: vsp9000core1.dat

Return to License Bank

(Please do not use the back button)

The license file is a compressed binary file. It is important that when downloading or saving this file, that your browser does not automatically decompress this file or you will receive an error when adding the license to the switch.

3.6.7 License Installation

During the boot sequence, a Virtual Services Platform 9000 series switch will search the internal flash for a license filename with a ***.dat*** extension. While the name of the license file is not important, for consistency with other platforms it is recommended that the license file name be called ***license.dat***.

The license filename must be in lower case when being copied to the VSP 9000 series switch.

An Avaya VSP 9000 license may be installed using the command line interface or Device Manager by performing one of the following procedures:

3.6.7.1 Avaya Command Line Interface (ACLI)

1 Using ACLI enable the *privExec* mode and access the *configuration* context to copy the license file to internal flash on the switch:

```
VSP9000-1:1(config)# copy 192.168.40.100:vsp9000core1.dat /intflash/license.dat
```

2 Using ACLI load the license file:

```
VSP9000-1:1(config)# load-license
```

If the chassis has two CP module installed, you do not need to install the license file on the secondary CP module. After HA is enabled, the primary CP will copy the license vectors to the secondary CP module.

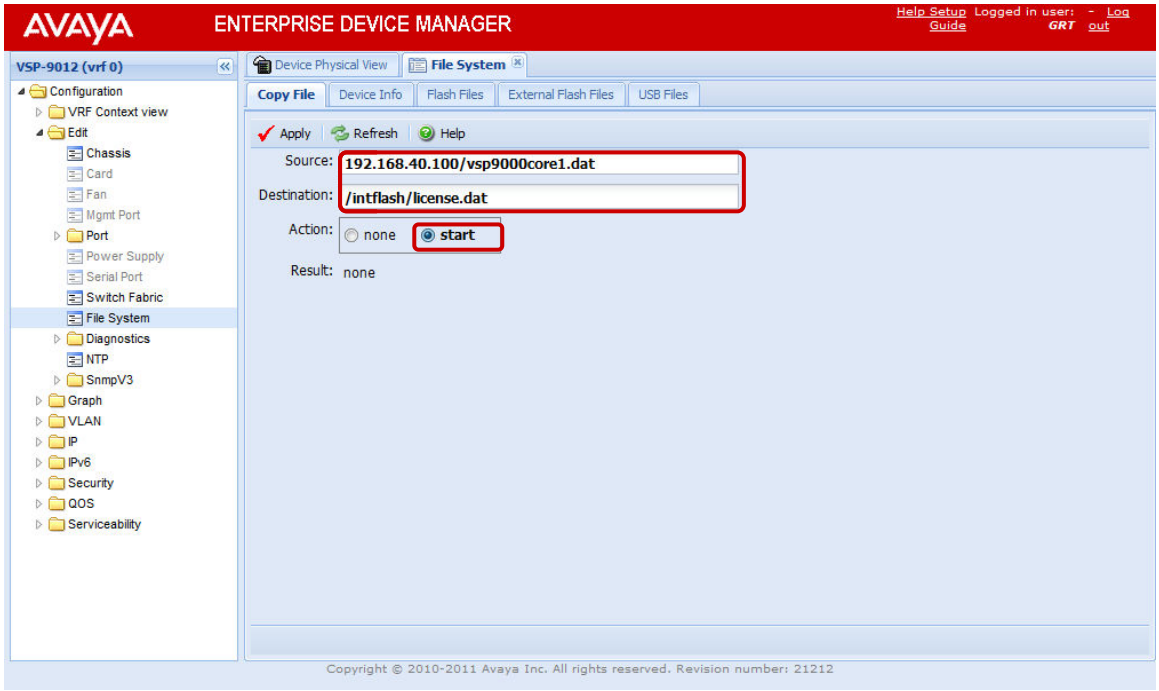
If the loading fails, or if the switch restarts and cannot locate the license file, the switch will revert to base functionality.

Installed licenses may be viewed in the ACLI by issuing the ***show license*** command.

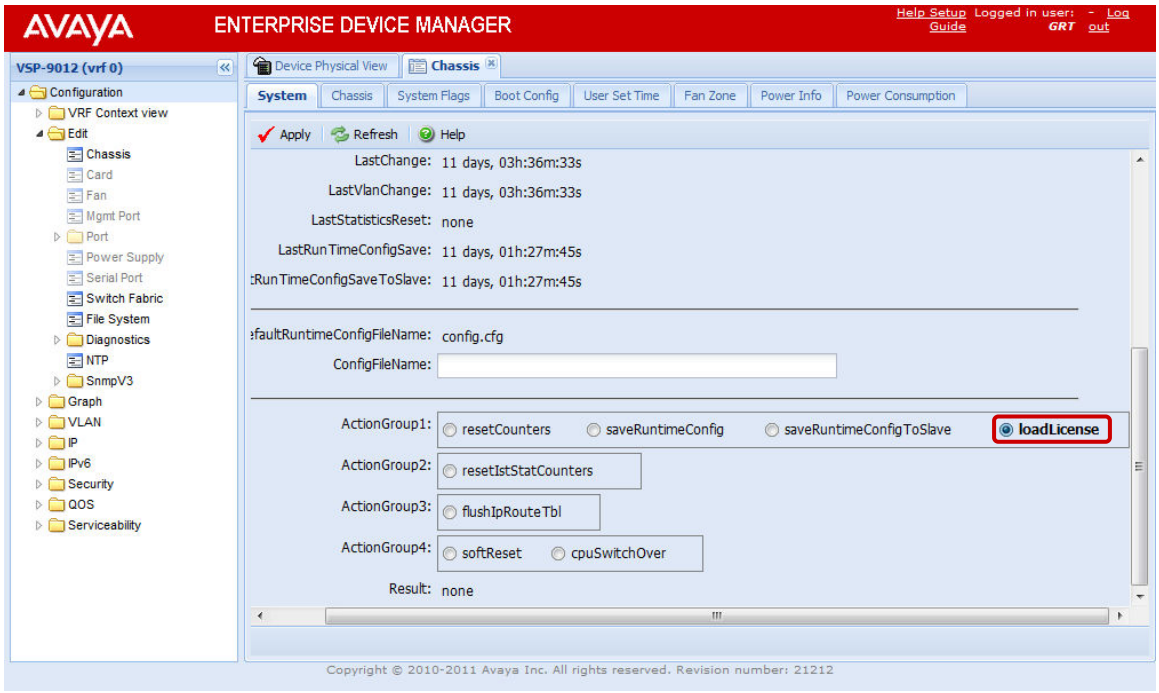
Ensure the license filename uses lower case characters when being copied and issue a ***save config*** command to save the system configuration.

3.6.7.2 Avaya Enterprise Device Manager (EDM)

1 In EDM select *Edit* then *File System*. In the *Source* field enter the TFTP server IP address, path and license file name. In the *Destination* field enter */intflash/license.dat*. Select *start* then click *Apply*:



2 In EDM select *Edit* then *Chassis*. In *ActionGroup1* select *loadLicense* then click *Apply*:



If the chassis has two CP module installed, you do not need to install the license file on the secondary CP module. After HA is enabled, the primary CP will copy the license vectors to the secondary CP module.

If the loading fails, or if the switch restarts and cannot locate the license file, the switch will revert to base functionality.

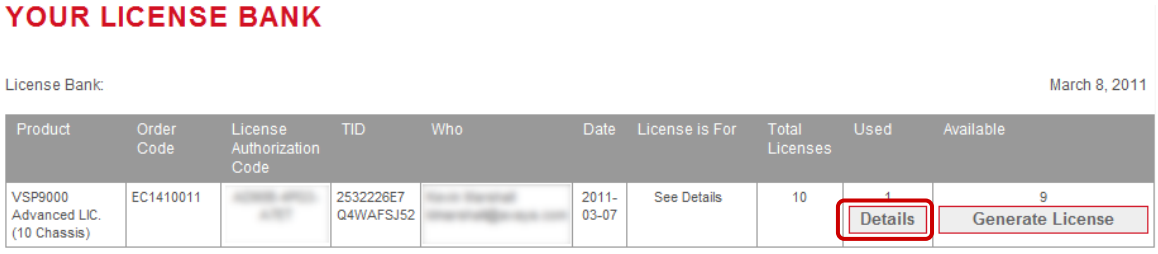
Installed licenses may be viewed in the ACLI by issuing the ***show license*** command.

Ensure the license filename uses lower case characters when being copied and issue a ***save config*** command to save the system configuration.

3.6.8 Replacing a Chassis

In the event of a switch failure, licenses may be transferred between Virtual Services Platform 9000 switch chassis using the following procedure:

1 Access the *License Bank* page where the Advanced or Premier license was deposited. Locate the Advanced or Premier license for the Virtual Services Platform 9000 to be transferred then click *Details*:

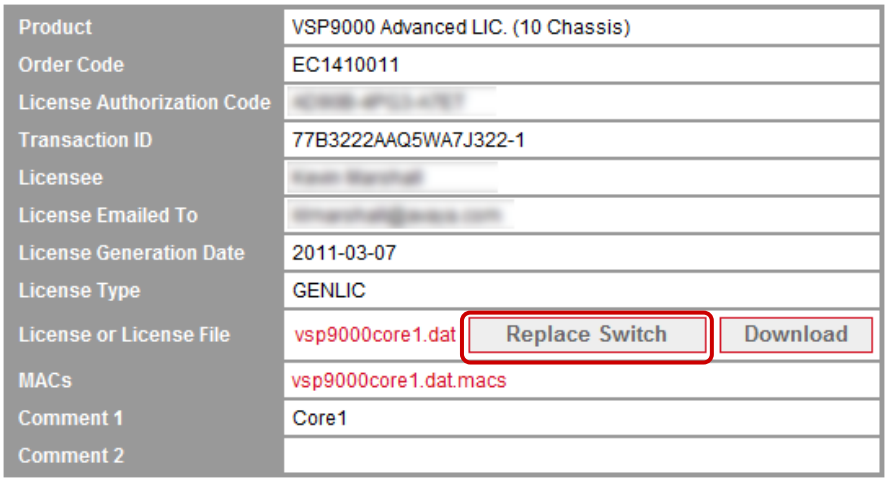


YOUR LICENSE BANK

License Bank: March 8, 2011

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
VSP9000 Advanced LIC. (10 Chassis)	EC1410011	[redacted]	2532226E7 Q4WAFSJ52	[redacted]	2011-03-07	See Details	10	1 Details	9 Generate License

2 In the *License Bank Details* page locate the license for the Virtual Services Platform 9000 to be transferred then click *Replace Switch*:



Product	VSP9000 Advanced LIC. (10 Chassis)
Order Code	EC1410011
License Authorization Code	[redacted]
Transaction ID	77B3222AAQ5WA7J322-1
Licensee	[redacted]
License Emailed To	[redacted]
License Generation Date	2011-03-07
License Type	GENLIC
License or License File	vsp9000core1.dat Replace Switch Download
MACs	vsp9000core1.dat.macs
Comment 1	Core1
Comment 2	

3 In the *Replace Switch MAC* page, enter the *Replacement Switch MAC Address* then select the *Switch MAC address to replace*. Click *Replace Switch MAC*:

REPLACE SWITCH MAC
License File: vsp9000core1.dat
Step 1: Enter Replacement Switch MAC Address:
00:24:7f:9e:00:00
Step 2: Select the Switch MAC Address to replace:
00:e0:56:bc:00:00
Step 3: Once you click on "Replace Switch MAC" your new file can be downloaded from your License Bank Details page:
Replace Switch MAC
Cancel

If you have multiple entries for the same license type, you will have to systematically check the LAC entry by clicking on the Details button and looking at the license file name in the transaction entries.

4. Unified Branch

4.1 Advanced Gateway 2330

This flexible branch gateway solution enables enterprises to reliably extend centralized Unified Communications services to remote users. Interoperable with Avaya Aura® and other SIP servers, the gateway can provide local branch connectivity to the PSTN, and SIP survivability in case of IP WAN failure or a service outage.

The Advanced Gateway 2330 can be software upgraded to a full suite of routing and WAN services – equivalent to Avaya's Secure Router 2330. When upgraded, it can provide feature-rich voice and data services in a single multi-purpose platform, consolidating multiple devices and reducing branch deployment costs.

4.1.1 Licensing

As of this writing, the only product release which supports the Advanced Gateway software image is the Advanced Gateway 2330.

The Advanced Gateway utilizes a gateway application specific version of the Secure Router 10.x operating software. The "AG" specific version of the operating software is designated by an "AG" at the beginning of the version number, where the corresponding full feature version has "SR" preceding the version number. The AG supports only those features required for SIP Survivable Gateway functionality.

There are three license options for the Advanced Gateway, number of DSP channels, number of SIP Users and full router feature set.

Base	DSP Channels	SSM Users	Routing
▪ SIP Gateway. ▪ SIP Survivability Mode. ▪ 8 DSP Channels (2 & 4 FXO models. ▪ 32 DSP Channels (1 PRI model). ▪ 25 SIP users.	▪ 16 Channels. ▪ 32 Channels. ▪ 64 Channels.	▪ 100 Users.	▪ Full SR Feature Set.

Table 4.1.1 – Advanced Gateway 2330 Licensing Levels

4.1.2 Base License

The base Advanced Gateway utilizes a variation of the Secure Router software that provides support for all of the SIP Gateway functionality associated with the Secure Router 2330 with PVIM is installed, yet lacks most of the advanced routing capability. The Advanced Gateway 2330 hardware includes the PVIM factory installed as well FXS and FXO or PRI interface modules in one of three bundled packages.

The FXO bundles include a license for 8 DSP channels and 25 SIP Users. The PRI bundle includes a license for 32 DSP channels and 25 SIP Users.

Table 4.1.2 provides a list of base license kits available with the Advanced Gateway 2330:

Order Code	Description
SR4342A01E5	AG2330 with 4 x FXO, 4 x FXS, PVIM, 8 DSP, 25 SIP Users.
SR4342A02E5	AG2330 with 1 x PRI, 4 x FXS, PVIM, 32 DSP, 25 SIP Users.
SR4342A03E5	AG2330 with 2 x FXO, 2 x FXS, PVIM, 8 DSP, 25 SIP Users.
SR4342A01E5	AG2330 with 4 x FXO, 4 x FXS, PVIM, 8 DSP, 25 SIP Users.

Table 4.1.2 – Advanced Gateway 2330 Base License Kits

4.1.3 DSP License

The Packet Voice Internal Module (PVIM) provides the Digital Signal Processor (DSP) functionality for the Advanced Gateway 2330. When installed by default the PVIM has 8 DSP channels enabled. The DSP channels are licensed as full duplex, allowing for both outbound and incoming analog to digital signal processing for a single call. A DSP channel is utilized anytime a call is utilizing a PSTN communication path, which occurs when the device is in SIP Survivability Mode. A DSP channel is utilized any time a call is utilizing a PSTN communications path or connects to an analog phone, whether in normal mode or survivable mode.

The DSP licenses are provided in a manner that enables up to the licensed number of DSP channels. For example, the PVM/PVIM includes 8 DSP channels. The 32 DSP channel upgrade enables 24 additional DSPs for a total of 32. The DSP licenses are not incremental; two DSP licenses cannot be combined to enable the sum of the two licensed values.

Table 4.1.3 provides a list of DSP license kits available for the Advanced Gateway 2330:

Order Code	Description
SR4304001	Activates 16 DSP channels (not applicable to AG2330 1 x PRI bundle).
SR4304002	Activates 32 DSP channels (included with AG2330 1 x PRI bundle).
SR4304003	Activates 64 DSP channels.

Table 4.1.3 – Advanced Gateway 2330 DSP License Kits

4.1.4 SSM User License

The Advanced Gateway 2330 supports a feature known as SIP Survivability Mode (SSM). Each SIP device needs a SIP user license in order to make use of the SSM function. The PVIM includes 25 SIP user licenses. The Advanced Gateway supports a maximum of 100 SIP users licensed for SSM. The SIP user license is a step function, 25 or 100.

Table 4.1.4 provides a list of SSM user license kits available for the Advanced Gateway 2330:

Order Code	Description
SR3716002	SIP Survivability Mode license. Increases SIP Survivability capability from 25 SIP devices to 100 devices.

Table 4.1.4 – Advanced Gateway 2330 SSM User License Kits

4.1.5 Full Routing License

The Advanced Gateway 2330 supports a license which can enable the full Secure Router 2330 feature set. The Secure Router 2330 feature set is required to enable WAN (PPP, Frame Relay), routing protocols (RIP, OSPF, BFP) or VPN capability (IPsec) or any other advanced routing features including but not limited to Multicast, VRRP or Firewall.

Table 4.1.5 provides a list of full routing license kits available for the Advanced Gateway 2330:

Order Code	Description
SR2108004	Routing feature set upgrade for Advanced Gateway 2330.

Table 4.1.5 – Advanced Gateway 2330 Full Routing License Kits

4.1.6 VPN License

In order to utilize the IPsec encryption of the data path, the Advanced Gateway 2330 requires the full routing license and a hardware module known as the Security Coprocessor Internal Module (SCIM) to be installed. With the full routing license and SCIM installed, the “VPN” features become available in the command line. The SCIM constitutes licensing of the VPN capability in the Advanced Gateway 2330. No additional steps need to be taken to enable VPN support on the Advanced Gateway 2330.

Table 4.1.6 provides a list of VPN license kits available for the Advanced Gateway 2330:

Order Code	Description
SR0004055E6	SR2330 IPsec VPN Encryption Module. 100 IPsec Tunnels (Field Install).

Table 4.1.6 – Advanced Gateway 2330 VPN License Kits

The VPN modules for the Secure Router 2330 and Secure Router 4134 include a CD containing the Avaya IPsec VPN client for Microsoft Windows. This client has an unlimited right to copy.

Both the SCIM and the full routing upgrade license are required to support VPN on the Advanced Gateway 2330.

4.1.7 License Keying and Methodology

Licensed features on the Advanced Gateway 2330 are based on the serial number of the system motherboard (MPU_A). The serial number for an Advanced Gateway may be obtained by CLI using the following procedure:

Using the CLI, issue the *show chassis* command:

```
AG2330-1# show chassis
```

```
Chassis Model: AG2330
Chassis Operational Status: NORMAL

Chassis Serial number: LBNNTMJX960C6V
Chassis Rev: 4

Slot/SubSlot    Card-Type       Status        Serial#
-----------------------------------------------------
   0            MPU_A           NORMAL        LBNNTMJX960C10
```

4.1.8 License Acquisition

An Advanced Gateway DSP, SSM user or full routing license keys can be obtained using the following procedure:

1. Contact your or authorized reseller, Avaya Sales representative or Avaya Customer Support and purchase the appropriate license.
2. For Global Avaya Technical Support, see www.avaya.com/support.
3. Contact Avaya by sending e-mail to avaya0118@gwsmail.com. The e-mail needs to include the following information:
    a. Company name, address, contact name, phone number and email address.
    b. Product order code for the software license you purchased
    c. Model and serial number or the Advanced Gateway 2330 (obtained using the ***show chassis*** command)
4. Avaya will verify the validity of the request and reply to the e-mail with a license key that is unique to the provided Secure Router serial number.

The license key is directly associated with the Advanced Gateways serial number so be sure to provide the MPU_A serial number in order to receive a valid license key.

4.1.9 DSP License Installation

A DSP license key may be installed using the command line interface by performing the following procedure:

1 Using the CLI enable the configuration mode and issue the *system licenses pvm_channels* command followed by the number of DSP channels to upgrade to. The system will prompt you to enter a license key:

```
AG2330-1/configure# system licenses pvm_channels [8 | 16 | 32 | 64]
```

After the Advanced license key has been successfully installed, you will need to reboot the Secure Router for the licensed features to be activated.

The license key is case sensitive.

Installed licenses may be viewed in the CLI by issuing the ***show system license*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

4.1.10 SSM User License Installation

A SSM user license key may be installed using the command line interface by performing the following procedure:

1 Using the CLI enable the configuration mode and issue the *system licenses ssm_users* command. The system will prompt you to enter a license key:

```
AG2330-1/configure# system licenses ssm_users
```

After the Advanced license key has been successfully installed, you will need to reboot the Secure Router for the licensed features to be activated.

The license key is case sensitive.

Installed licenses may be viewed in the CLI by issuing the ***show system license*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

4.1.11 Full Routing License Installation

A full routing license key may be installed using the command line interface by performing the following procedure:

1 Using the CLI enable the configuration mode and issue the *system licenses convertToRouter* command. The system will prompt you to enter a license key:

```
AG2330-1/configure# system licenses convertToRouter
```

After the Advanced license key has been successfully installed, you will need to reboot the Secure Router for the licensed features to be activated.

The license key is case sensitive.

Installed licenses may be viewed in the CLI by issuing the ***show system license*** command.

The Advanced Gateway can be reverted back to a gateway by issuing the ***system licenses convertToGateway*** command. No license key is required.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

4.2 Secure Router 100X / 3120

The Avaya Secure Router portfolio enables secure end-to-end converged solutions. The Secure Routers combine robust IP routing, flexible WAN connectivity and security in a single cost-effective device. Ideal for enterprise branch, remote or regional site environments, Avaya Secure Routers are optimized to deliver the low-latency, high packet throughput required by IP telephony and multimedia applications. Providing wire-speed performance even with advanced WAN services enabled, they are the right solution for enterprises requiring high-speed Internet or private WAN connectivity.

4.2.1 Licensing

The Secure Router 1001/1001S, 1002, 1004 and 3120 utilize operating software version 9.x, where the current version is 9.4.1.

With the Secure Router 9.x software all the routing features are included in the base license. The router is shipped with the software factory loaded; customers do not need to order the software as a separate orderable item. Customers are strongly encouraged to maintain a support agreement such that they can obtain updates to the operating software for avaya.com.

Secure Router 9.x supports add on licenses for IPsec VPN and the Secure Router 1002 and 1004 supports licenses to enable additional T1/E1 interfaces.

Base	VPN	T1/E1
▪ BGP. ▪ IPsec VPN (Certain Bundles). ▪ Multicast. ▪ OSPF. ▪ QoS. ▪ RIPv1/v2. ▪ Stateful Firewall. ▪ VLANs.	▪ Secure Router 1001/1001S – 100 VPN Tunnels. ▪ Secure Router 1002 – 100 VPN Tunnels. ▪ Secure Router 1004 – 100 VPN Tunnels. ▪ Secure Router 3120 – 1,000 VPN Tunnels. ▪ Secure Router 4134 – 1,000 VPN Tunnels.	▪ Secure Router 1002/1004 1 T1/E1 Port Upgrade. ▪ Secure Router 1002/1004 2 T1/E1 Port Upgrade. ▪ Secure Router 1002/1004 3 T1/E1 Port Upgrade.

Table 4.2.1 – Secure Router 100x/3120 Licensing Levels

4.2.2 Base License

A base license is included with the purchase of each Secure Router and provides BGP, Multicast, OSPF, QoS, RIP, Stateful Firewall and VLAN support at no additional cost. Additionally bundles may be purchased which include IPsec VPN support as well as a specific number of active T1/E1 ports.

4.2.3 T1/E1 License

The Secure Router 1002/1004 can be ordered with a limited number of activated T1/E1 ports depending on the customer's requirement. The SR1002/1004 come with the physical ports installed in the chassis but the ports are administratively disabled. In case the customer has a need to add additional T1/E1 port(s), a T1/E1 upgrade license may be purchased to activate the remaining available T1/E1 port(s) on the Secure Router unit.

Table 4.2.3 provides a list of T1/E1 license kits available for the Secure Router 1002/1004:

Order Code	Description
SR2116004	SR1002 Upgrade to 1 additional T1/E1 port (2 configured ports maximum).
SR2116006	SR1004 Upgrade to 1 additional T1/E1 port (4 configured ports maximum).
SR2116007	SR1004 Upgrade to 2 additional T1/E1 port (4 configured ports maximum).
SR2116008	SR1004 Upgrade to 3 additional T1/E1 port (4 configured ports maximum).

Table 4.2.3 – Secure Router 100x T1/E1 License Kits

4.2.4 VPN License

The Secure Router 1001/1001S, 1002, 1004, 3120 VPN license is an optional upgrade to enable IPsec VPN functionality. The 9.4.x operating software does not currently support termination of the Avaya IPsec client for Microsoft Windows. No IPsec client software is provided by Avaya with the SR100x/SR3120 VPN license.

Avaya recommends Safenet HARemote client software for those customers wishing to terminate IPsec VPN Clients on the Secure Router 100x and 3120. This client must be purchased directly from Safenet or through a Safenet reseller http://biz.safenet-inc.com/prod/software/index.asp.

Table 4.2.4 provides a list of VPN license kits available for the Secure Router 100x and 3120:

Order Code	Description
SR2116002	Secure Router 1001/1001S VPN Upgrade for 100 VPN tunnels.
SR2116003	Secure Router 1002 VPN Upgrade for 100 VPN tunnels.
SR2116005	Secure Router 1004 VPN Upgrade for 100 VPN tunnels.
SR2116012	Secure Router 3120 VPN Upgrade for 1,000 VPN tunnels.

Table 4.2.4 – Secure Router 100x/3120 VPN License Kits

4.2.5 License Keying and Methodology

VPN and T1/E1 licenses are based on the model and serial number of the Secure Router. The model number and serial number for a Secure Router may be obtained by CLI using the following procedure:

Using the CLI, issue the *show system configuration* command:

```
SR1001/configure > show system configuration

DRAM quantity:          128MB
DRAM type:              SDRAM
Flash:                  16MB
Model Number:           1001
Serial Number:          10010AF3D6310183
Processor ID:           NEC VR4133
FPGA Revision Id:       17.4
HW Assembly Revision:   A
PCB Revision:           A
```

4.2.6 License Acquisition

A Secure Router VPN and T1/E1 port license keys can be obtained using the following procedure:

1. Contact your or authorized reseller, Avaya Sales representative or Avaya Customer Support and purchase the VPN or T1/E1 port license.
2. For Global Avaya Technical Support, see www.avaya.com/support.
3. Contact Avaya by sending e-mail to avaya0118@gwsmail.com. The e-mail needs to include the following information:
    a. Company name, address, contact name, phone number and email address.
    b. Product order code for the software license you purchased
    c. Model and serial number or the Secure Router (obtained using the ***show system configuration*** command)
    d. For the T1/E1 port upgrade also indicate how many T1/E1 ports are already active in the unit.
4. Avaya will verify the validity of the request and reply to the e-mail with a license key that is unique to the provided Secure Router serial number.

The license key is directly associated with the Secure Routers serial number so be sure to provide the correct serial number in order to receive a valid license key.

4.2.7 T1/E1 License Installation

A T1/E1 license key may be installed on a Secure Router 100x using the command line interface by performing the following procedure:

1 Using CLI enable the configuration mode and issue the *system licenses enable_X_ports* command followed by the license key where *X* is the number of T1/E1 ports to be activated:

```
SR1001/configure > sr1001/configure > system licenses enable_1_ports <license-key>
```

After the Advanced license key has been successfully installed, you will need to reboot the Secure Router for the licensed features to be activated.

The license key is case sensitive.

Installed licenses may be viewed in the CLI by issuing the ***show system license*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

4.2.8 VPN License Installation

A VPN license key may be installed using the command line interface by performing the following procedure:

1 Using the CLI enable the configuration mode and issue the *system licenses advanced_vpn* command followed by the license key:

```
SR1001/configure > system licenses advanced_vpn <license-key>
```

After the Advanced license key has been successfully installed, you will need to reboot the Secure Router for the licensed features to be activated.

The license key is case sensitive.

Installed licenses may be viewed in the CLI by issuing the ***show system license*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

4.3 Secure Router 2330 / 4134

The Secure Router 2330 provides IP routing, voice gateway and security services in a cost-effective modular platform. It brings together routing, wide-area networking (WAN) and voice gateway services, reducing the number of devices required in the branch, while providing fast, secure, and reliable WAN Service.

Offering high-end performance and capacity, the Secure Router 4134 for unified communications integrates multiple networking functions in a single device. Functions include IPv4/IPv6 routing, wide area networking, high-density Ethernet switching, power over Ethernet, voice media gateway, application hosting, and security. The 4134 can address the routing and connectivity needs of large enterprise branches as well as regional or even headquarter sites.

4.3.1 Licensing

The Secure Router 2330 and 4134 utilizes the SR10.x version of operating software. The current version of Secure Router 2330 / 4134 is 10.3.0. The Secure Router 10.x software is shipped with the router from the factory, an additional copy of the software does not need to be ordered separately.

With the Secure Router 10.x software all the advanced routing features are included in the base license with the exception of IPsec VPN and SIP Gateway features.

Base	With Packet Voce Module		With VPN Module
SR2330 / SR4134	**DSP Channels**	**SSM Users**	**IPsec Tunnels**
▪ All L3 routing protocols, RIP, OSPF, BGP, multicast. ▪ L2 WAN protocols, Frame Relay, PPP, MLPPP. ▪ Quality of Service. ▪ Stateful Firewall, NAT. ▪ MPLS, SNMP, VRRP.	▪ 16 Channels. ▪ 32 Channels. ▪ 64 Channels. ▪ 128 Channels (SR4134 Only).	▪ 100 Users (SR2330 and SR4134) ▪ 300 Users (SR4131 Only).	▪ 100 Tunnels (SR2330 Only). ▪ 1000 Tunnels (SR4134 Only).

Table 4.3.1 – Secure Router 2330/4131 Licensing Levels

4.3.2 Base License

A base license is included with the purchase of each Secure Router 2330 and Secure Router 4134 and provides full layer 3 routing (RIP, OSPF, and BGP), Multicast, QoS, Stateful Firewall, MPLS and VLANs support at no additional cost.

4.3.3 SIP Media Gateway License

With the optional Packet Voice Module installed in either the Secure Router 2330 or Secure Router 4134 the complete SIP Media Gateway feature set becomes available. The presence of the Packet Voice Module constitutes the licensing of the feature set, and the feature set will automatically be enabled without further action. The following table provides the ordering information specific to the Packet Voice Module for the Secure Router 2330 and Secure Router 4134.

Table 4.3.3 provides a list of SIP media gateway license kits available for the Secure Router 2330 / 4134:

Order Code	Description
SR0004056E6	Packetized Voice Module (PVIM) for Secure Router 2330. Includes 8 Digital Signal Processor (DSP) channels and 25 SIP Survivability Module (SSM) users activated.
SR3704001E6	Packetized Voice Module (PVM) for Secure Router 4134. Includes 8 Digital Signal Processor (DSP) channels and 25 SIP Survivability Module (SSM) users activated.

Table 4.3.3 – Secure Router 2330/4131 SIP Licensing Levels

The Packet Voice Module is called the PVUM with the Secure Router 2330 and the PVM with the Secure Router 4134.

4.3.4 DSP License

The Packet Voice Internal Module (PVIM) provides the Digital Signal Processor (DSP) functionality for the Secure Router platforms. When installed by default the PVIM has 8 DSP channels enabled. The DSP channels are licensed as full duplex, allowing for both outbound and incoming analog to digital signal processing for a single call. A DSP channel is utilized anytime a call is utilizing a PSTN communication path, which occurs when the device is in SIP Survivability Mode. A DSP channel is utilized any time a call is utilizing a PSTN communications path or connects to an analog phone, whether in normal mode or survivable mode.

The DSP licenses are provided in a manner that enables up to the licensed number of DSP channels. For example, the PVM/PVIM includes 8 DSP channels. The 32 DSP channel upgrade enables 24 additional DSPs for a total of 32. The DSP licenses are not incremental; two DSP licenses cannot be combined to enable the sum of the two licensed values.

Table 4.3.4 provides a list of DSP license kits available for the Secure Router 2330 / 4134:

Order Code	Description
SR4304001	Activates 16 DSP channels (not applicable to AG2330 1 x PRI bundle).
SR4304002	Activates 32 DSP channels (included with AG2330 1 x PRI bundle).
SR4304003	Activates 64 DSP channels.
SR4304052	Activates 128 DSP channels (SR4134 Only).

Table 4.3.4 – Secure Router 2330/4131 DSP License Kits

4.3.5 SSM User License

The Secure Router 2330 and Secure Router 4134 support a feature known as SIP Survivability Mode (SSM). Each SIP device needs a SIP User license in order to make use of the SSM function. The PVM/PVIM includes 25 SIP user licenses. The Secure Router 2330 supports a maximum of 100 SIP users licensed for SSM. The Secure Router 4134 supports a maximum of 300 SIP users licensed for SSM. 100 SIP User License is the only increment Avaya offers for the Secure Router 2330. The Secure Router 4134 can be licensed for 25, 100 or 300 SSM Users.

Table 4.3.5 provides a list of SSM user license kits available for the Secure Router 2330 / 4134:

Order Code	Description
SR3716002	SIP Survivability Mode license. Increases SIP Survivability capability from 25 SIP devices to 100 devices (SR2330 and SR4134).
SR3716006	SIP Survivability Mode license. Increases SIP Survivability capability from 25 SIP devices to 300 devices (SR4134 Only)

Table 4.3.5 – Secure Router 2330/4131 SIP User License Kits

4.3.6 VPN License

In order to utilize the IPsec encryption of the data path capability the Secure Router 2330 and Secure Router 4134 requires a hardware module known as the Security Coprocessor Internal Module (SCIM) to be installed. With the SCIM installed the “VPN” features become available in the command line. The SCIM constitutes licensing of the VPN capability in the Secure Router 2330 and Secure Router 4134. No additional steps need to be taken to enable VPN support on the Secure Router 2330 or Secure Router 4134.

Table 4.3.6 provides a list of VPN license kits available for the Secure Router 2330 / 4134:

Order Code	Description
SR0004055E6	SR2330 IPsec VPN Encryption Module. 100 IPsec Tunnels (Field Install).
SR0000024E5	SR4134 High Performance IPsec VPN Encryption Module. 1000 IPsec tunnels (Field Install).

Table 4.3.6 – Secure Router 2330 / 4134 VPN License Kits

The VPN modules for the Secure Router 2330 and Secure Router 4134 include a CD containing the Avaya IPsec VPN client for Microsoft Windows. This client has an unlimited right to copy.

Both the SCIM and the full routing upgrade license are required to support VPN on the Advanced Gateway 2330.

4.3.7 License Keying and Methodology

Licensed features on the Secure Router 2330 and Secure Router 4134 are based on the serial number of the system motherboard (MPU_A). The serial number for a Secure Router 2330 or Secure Router 4134 may be obtained by CLI using the following procedure:

Using the CLI, issue the *show chassis* command:

```
SR2330-1# show chassis
```

```
Chassis Model: SR2330
Chassis Operational Status: NORMAL

Chassis Serial number: LBNNTMJX960C6V
Chassis Rev: 4

Slot/SubSlot    Card-Type       Status        Serial#
-------------------------------------------------------
   0            MPU_A           NORMAL        LBNNTMJX960C10
```

4.3.8 License Acquisition

An Advanced Gateway DSP or SSM user license keys can be obtained using the following procedure:

1. Contact your or authorized reseller, Avaya Sales representative or Avaya Customer Support and purchase the appropriate license.
2. For Global Avaya Technical Support, see www.avaya.com/support.
3. Contact Avaya by sending e-mail to avaya0118@gwsmail.com. The e-mail needs to include the following information:
    a. Company name, address, contact name, phone number and email address.
    b. Product order code for the software license you purchased
    c. Model and serial number or the Secure Router 2330 or Secure Router 4134 (obtained using the ***show chassis*** command)
4. Avaya will verify the validity of the request and reply to the e-mail with a license key that is unique to the provided Secure Router serial number.

The license key is directly associated with the Advanced Gateways serial number so be sure to provide the MPU_A serial number in order to receive a valid license key.

4.3.9 DSP License Installation

A DSP license key may be installed using the command line interface by performing the following procedure:

1 Using the CLI enable the configuration mode and issue the *system licenses pvm_channels* command followed by the number of DSP channels to upgrade to. The system will prompt you to enter a license key:

```
SR2330-1/configure# system licenses pvm_channels [8 | 16 | 32 | 64]
```

After the Advanced license key has been successfully installed, you will need to reboot the Secure Router for the licensed features to be activated.

The license key is case sensitive.

Installed licenses may be viewed in the CLI by issuing the ***show system license*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

4.3.10 SSM User License Installation

A SIP user license key may be installed using the command line interface by performing the following procedure:

1 Using the CLI enable the configuration mode and issue the *system licenses ssm_users* command followed by the number of SIP users to upgrade to. The system will prompt you to enter a license key:

```
SR2330-1/configure# system licenses ssm_users [100 | 300]
```

After the Advanced license key has been successfully installed, you will need to reboot the Secure Router for the licensed features to be activated.

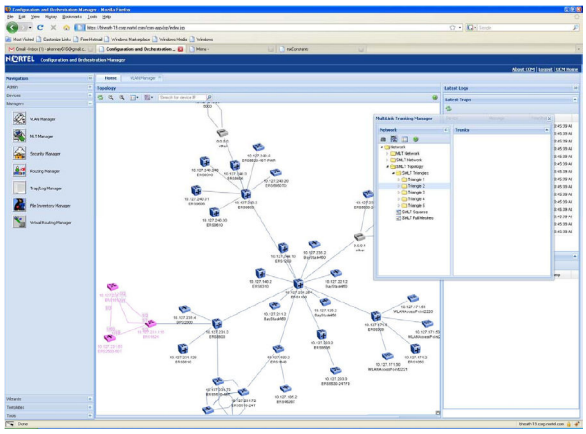
The license key is case sensitive.

Installed licenses may be viewed in the CLI by issuing the ***show system license*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

5. Unified Communications Management

5.1 Configuration and Orchestration Manager (COM)



Avaya's Configuration and Orchestration Manager (COM) delivers centralized configuration, provisioning and troubleshooting for enterprise-wide devices and technologies. It is a real-time Web-based application, enabling anytime, anywhere access for multiple authorized users. With role-based access privileges and audit trails, a high level of security is ensured.

COM simplifies network-wide configuration by offering a topology-driven GUI with workflow-based visibility. Complex configurations such as VLAN, SMLT/MLT, VRF and multicast are easily managed using templates and wizards.

In addition, COM can provide network discovery, password management and serve as a platform for downloading, launching and hosting off-box device management. With centralized off-box element management, Trap and Syslog management, COM also streamlines managing device inventory, software updates as well as device and user access controls. COM product includes Bulk Configuration Management (BCM) module as well that provides network wide device configuration file management, patch management and device file upgrade management.

5.1.1 COM Licensing

A COM base license is required, which supports up to 50 nodes. Additional nodes can be supported by purchasing COM upgrade licenses supporting up to 1,200 nodes. COM v3.0 was released in May 2012.

Table 5.1.1 provides a list of order codes of COM v3.0 base license and upgrade license options.

Order Code	Description
AH2735001-3.0	COM 3.0 Base 50 ("Enterprise 50". 50 device node license)
AH2735012-3.0	COM VSN Manager Upgrade. Upgrade license for COM 3.0 to enable SPBm configuration, provisioning & troubleshooting management features. Requires COM Enterprise base 50 v3.0.
AH2735013-3.0	COM 3.0 Enterprise Plus upgrade 1200-1500.
AH2735014-3.0	COM 3.0 Enterprise Plus bundle. Includes COM base 50, 50-1200 upgrade, 1200-1500 Ent upgrade, BCM base 50, and VSN Management (SPBm).
AH2735003	COM Upgrade 50-250 (upgrade license for Base 50 device to 250 device management)
AH2735004	COM Upgrade 50-1200 (upgrade license for Base 50 device to 1200 device management)
AH2735005	COM Upgrade 250-1200 (upgrade license for Base 250 device to 1200 device management)

Table 5.1.1 – COM License Kits

A Bulk Configuration Manager (BCM) base license is optionally required, which includes support of up to 100 nodes. Additional nodes can be supported by purchasing BCM upgrade licenses to provide support of up to 5,000 nodes.

Table 5.1.2 provides a list of order code of BCM v3.0 Base license and upgrade license options.

Order Code	Description
AH2735006-3.0*	Bulk Configuration Manager (BCM) Base 100
AH2735007	Bulk Configuration Manager (BCM) Upgrade 100-1200
AH2735008	Bulk Configuration Manager (BCM) Upgrade 100-5000
AH2735009	Bulk Configuration Manager (BCM) Upgrade 1200-5000
*BCM license requires works in conjunction with COM Base 50 product install. Hence customer is required to purchase both the product licenses in order to use BCM product features.	

Table 5.1.2 – BCM License Kits

5.1.2 Platform requirements

5.1.2.1 Operating System

The following operating systems support Configuration and Orchestration Manager:

- Redhat Linux v5.2/5.3
- Microsoft Windows 2003 and 2008 Server
- Virtualization – Hyper V and VMware environment
- Windows XP, Windows 7, CentOS – supported only for COM demos and lab.

5.1.2.2 Browser Support

The following Web browsers support Configuration and Orchestration Manager:

- Internet Explorer 9.0
- Firefox 10.0 & 11.0

5.1.2.3 Server hardware

The following information is Avaya's minimum recommended hardware requirements for PC/Server platforms for Configuration and Orchestration Manager version 3.0:

Product	Deployment	CPU	Memory	Hard Drive (available space)	Ethernet (min)
COM	Small (<=100 Devices nodes Single user)	Core 2 Dou (2Ghz and above)	2 GB (DDR2 RAM)	5 GB (SATA Drive)	100MBPS
	Medium (<=500 Device nodes, 3 concurrent users)	Quad Core Xeon (e.g. Intel® Xeon® E5520, 2.26Ghz, 8M Cache)	4 GB (DDR3 dual ranked preferred)	20 GB (10K RPM SAS 6Gps)	GigE
	Large (1500 Devices Nodes, 5 concurrent users)	Dual Quad Core Xeon (e.g. Intel® Xeon® E5520, 2.26Ghz, 8M Cache)	6 GB (DDR3 dual ranked preferred)	40 GB (10K RPM SAS 6Gps)	GigE

5.1.2.4 COM + BCM License generation and installation

Please refer to Section 5.5 of this document for the common procedure for license acquisition, generation and installations for UCM applications.

5.2 Visualization Performance & Fault Manager (VPFM)

Avaya's Visualization Performance and Fault Manager (VPFM) has the ability to discover and monitor every IP/SNMP device on your network, even if equipment comes from a vendor other than Avaya. The application transforms complex network topology into simple-to-use, hierarchy-based maps, giving a clear, end-to-end view that helps your IT personnel quickly determine if network issues are physical or logical in nature. Additionally, VPFM offers a powerful fault management capability, including correlation and integration with network topologies. Finally, VPFM's performance management capability can provide your enterprise with critical trending information that can be used to address capacity planning requirements — today, tomorrow and in the future.

5.2.1 VPFM Licensing

Visualization Performance and Fault Manager (VPFM) is licensed in two groups; VFPM-Lite and VPFM. A base license is first required, which includes support of up to 500 nodes/devices. Additional nodes can be supported by purchasing VPFM upgrade licenses to provide support of up to 20,500 nodes/devices maximum.

Table 5.2.1 provides a list of order codes of VPFM v3.0 base license and upgrade license options.

Order Code	Description
AH3313089-3.0	VPFM-Lite Base License – 500 devices. (DVD for Linux and Windows)
AH3313147	VPFM-Lite Incremental License – additional 2,000 devices
AH3313148	VPFM-Lite Enterprise License – up to total 20,500 devices

Table 5.2.1 – VPFM-Lite License Kits

Table 5.2.2 provides a list of order code of BCM v3.0 Base license and upgrade license options.

Order Code	Description
AH3313109-3.0	VPFM Base License – 500 devices. (DVD for Linux and Windows)
AH3313111	VPFM Incremental License – additional 2,000 devices
AH3313113	VPFM Enterprise License – up to total 20,500 devices

Table 5.2.2 – VPFM License Kits

5.2.2 Platform requirements

5.2.2.1 Operating System

The following operating systems support Visualization Performance and Fault Manager:

- Microsoft Windows 2003 and 2008 Server
- Virtualization – Hyper V and VMware environment
- VMware ESX / ESXi

5.2.2.2 Server hardware

The following information is Avaya's minimum recommended hardware requirements for PC/Server platforms for VPFM:

Management of up to 500 devices / 2,000 interfaces:

- Processor - Core 2 Duo
- Memory – 4GB DRAM (DDR)
- Storage – 20GB free space (SATA)

Management of up to 5,000 devices / 10,000 interfaces:

- Processor – Quad Core Xeon
- Memory – 6GB DRAM (DDR3 Dual ranked preferred)
- Storage – 40GB free space (SAS drive)

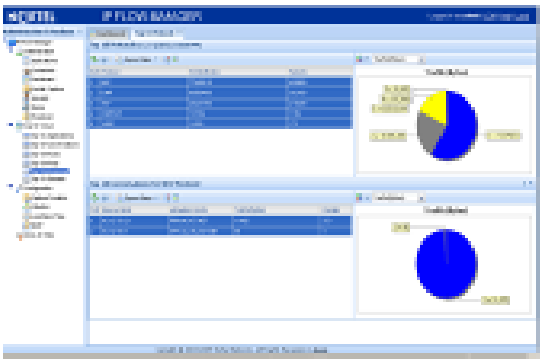
Management of up to 20,000 devices / 50,000 interfaces:

- Processor – Dual Quad Core Xeon (E5520 @2.26Ghz, 8M cache)
- Memory – 8GB DRAM (DDR3 Dual ranked preferred)
- Storage – 80GB free space (SAS drive – 10k RPM, 6Gbps)

5.2.2.3 VPFM License generation and installation

Please refer to Section 5.6 of this document for the common procedure for license acquisition, generation and installations for UCM applications.

5.3 IP Flow Manager (IPFM)



Avaya's IP Flow Manager (IPFM) is a unique network management software tool that enables administrators to monitor, view and diagnose problems at the application level and then use this flow-based data to make informed decisions about the network.

IPFM works in conjunction with Avaya's Ethernet Switch (ERS) portfolio, which includes ERS 8600, ERS 8300, ERS 5600, ERS 5500 and ERS 4500. Data is collected via the ERS, on a per-port basis, and forwarded to the IPFM, which performs monitoring, analysis and presentation of application issues and usage.

5.3.1 IPFM Licensing

IP Flow Manager (IPFM) is licensed. A base license is first required, which includes support of up to 4 IPFIX enabled devices. Additional devices can be supported by purchasing an incremental license or up to a total of 50 IPFIX enabled devices can be supported with the IPFM Enterprise license.

Table 5.3.1 provides a list of order codes of IPFM v2.0 base license and upgrade license options.

Order Code	Description
AH3313149-2.0	IP Flow Manager base license – manages up to 4 IPFIX enabled devices & Aggregated 200K flows / min.
AH3313150	IP Flow Manager incremental license for managing increments of 1 additional IPFIX enabled devices with 50K flows/min. Requires AH3313149.
AH3313151	IP Flow Manager Enterprise license for managing up to a total of 50 IPFIX enabled devices & aggregated 500K flows / min. Requires AH3313149.

Table 5.3.1 – IPFM License Kits

5.3.2 Platform requirements

5.3.2.1 Operating System

The following operating systems support IP Flow Manager:

- Microsoft Windows 2003 and 2008 Server
- Virtualization – Hyper V and VMware environment
- VMware ESX / ESXi

5.3.2.2 Server hardware

The following information is Avaya's minimum recommended hardware requirements for PC/Server platforms for IPFM:

Management of up to 500 devices / 2,000 interfaces:

- Processor - Core 2 Duo
- Memory – 4GB DRAM (DDR)
- Storage – 20GB free space (SATA)

Management of up to 5,000 devices / 10,000 interfaces:

- Processor – Quad Core Xeon
- Memory – 6GB DRAM (DDR3 Dual ranked preferred)
- Storage – 40GB free space (SAS drive)

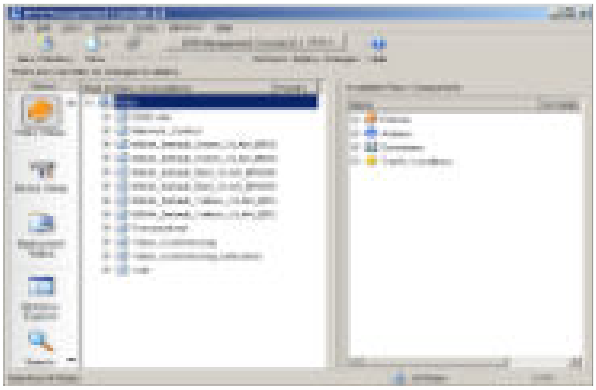
Management of up to 20,000 devices / 50,000 interfaces:

- Processor – Dual Quad Core Xeon (E5520 @2.26Ghz, 8M cache)
- Memory – 8GB DRAM (DDR3 Dual ranked preferred)
- Storage – 80GB free space (SAS drive – 10k RPM, 6Gbps)

5.3.2.3 IPFM License generation and installation

Please refer to Section 5.6 of this document for the common procedure for license acquisition, generation and installations for UCM applications.

5.4 Enterprise Policy Manager (EPM)



Avaya's Enterprise Policy Manager (EPM) is a network-level application that enables network administrators to manage bandwidth, prioritize traffic streams, set network access policies and control energy consumption. It provides tools for policy provisioning and closed-loop analysis, which enable your network manager to monitor policies and assess the impact of new ones on applications and services in the network.

Enterprise Policy Manager also performs an important role in Avaya's Proactive Voice Quality Management (PVQM) solution by providing QoS configuration capabilities that can provide acceptable levels of performance and reliability for VoIP applications, unified communications and all other business functions that are critically important to a customer's enterprise solution.

5.4.1 EPM Licensing

Enterprise Policy Manager (EPM) is licensed. A base license is first required, which includes support of up to 250 devices. Additional devices can be supported by purchasing EPM incremental upgrade licenses1,000 device increments and an to provide support of up to 20,500 nodes/devices maximum.

Table 5.4.1 provides a list of order codes of EPM v5.1 base license and upgrade license options.

Order Code	Description
AH3313103-5.1	EPM base – Manages up to 250 data devices
AH3313105	EPM Incremental License for managing increments of additional 1,000 data devices
AH3313107	EPM Enterprise License for managing up to a total of 10,250 data devices

Table 5.4.1 – EPM License Kits

5.4.2 Platform requirements

5.4.2.1 Operating System

The following operating systems support Enterprise Policy Manager:

- Microsoft Windows 2003 and 2008 Server
- Virtualization – Hyper V and VMware environment
- VMware ESX / ESXi

5.4.2.2 Server hardware

The following information is Avaya's minimum recommended hardware requirements for PC/Server platforms for EPM:

Management of up to 500 devices / 2,000 interfaces:

- Processor - Core 2 Duo
- Memory – 4GB DRAM (DDR)
- Storage – 20GB free space (SATA)

Management of up to 5,000 devices / 10,000 interfaces:

- Processor – Quad Core Xeon
- Memory – 6GB DRAM (DDR3 Dual ranked preferred)
- Storage – 40GB free space (SAS drive)

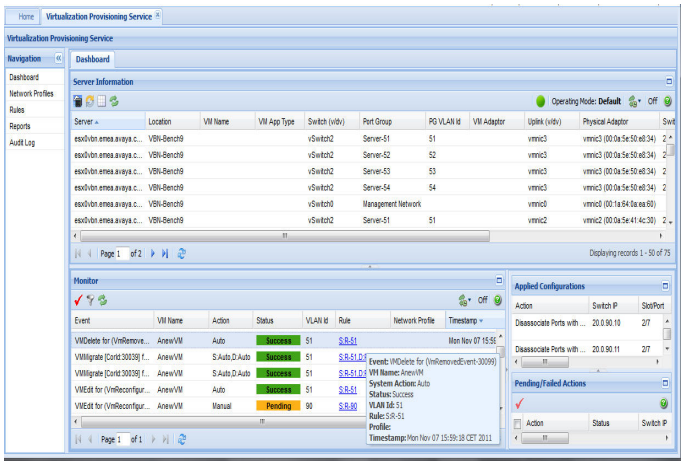
Management of up to 20,000 devices / 50,000 interfaces:

- Processor – Dual Quad Core Xeon (E5520 @2.26Ghz, 8M cache)
- Memory – 8GB DRAM (DDR3 Dual ranked preferred)
- Storage – 80GB free space (SAS drive – 10k RPM, 6Gbps)

5.4.2.3 EPM License generation and installation

Please refer to Section 5.6 of this document for the common procedure for license acquisition, generation and installations for UCM applications.

5.5 Virtualization Provisioning Service (VPS)



The Avaya Virtualization Provisioning Service is a management tool that automatically synchronizes the network to react to changes in the compute environment - increasing IT efficiency, reducing time to service and ensuring consistent application performance - in a highly dynamic, virtualized data center environment.

VPS automates service provisioning within the data center, provides insight into the entire Virtual Machine (VM) lifecycle from activation, to mobility, to deletion.

It also gives an end-to-end view of the virtualized data center including applications, servers and network devices across both physical and virtual environments and provisions network devices to "follow" VMs as they migrate between servers. VPS applies connectivity services and port profiles (QoS, ACLs) to edge devices at an individual VM level and provides historical reporting and tracking on VM moves and network provisioning, enabling network and server teams to work more efficiently and smarter together.

5.5.1 VPS Licensing

Virtualization Provisioning Service (VPS) is licensed. A base license is first required, which includes support of up to 20 devices. Additional devices can be supported by purchasing 50 device upgrade license.

Table 5.5.1 provides a list of order codes of VPS v1.0 base license and upgrade license options.

Order Code	Description
AH2735010-1.0	VPS enterprise base – Manages up to 20 data devices
AH2735011	VPS enterprise upgrade license – additional 50 devices

Table 5.5.1 – VPS License Kits

5.5.2 Platform requirements

5.5.2.1 Operating System

The following operating systems support Enterprise Policy Manager:

- Microsoft Windows 2003 and 2008 Server
- Virtualization – Hyper V and VMware environment
- VMware ESX / ESXi

5.5.2.2 Server hardware

The following information is Avaya's minimum recommended hardware requirements for PC/Server platforms for VPS:

Management of up to 20 devices and multi-user:

- Processor – Quad Core
- Memory – 4GB DRAM (DDR)
- Storage – 10GB free space
- NIC – 100Mbps or Gig E

Management of over 20 devices and multi-user:

- Processor – Quad Core
- Memory – 6GB DRAM
- Storage – 40GB free space (SAS drive)
- NIC – Gig E

5.5.2.3 VPS License generation and installation

Please refer to Section 5.6 of this document for the common procedure for license acquisition, generation and installations for UCM applications.

5.6 Unified Communications Management Portfolio

5.6.1 License Keying and Methodology

All Avaya Unified Communications Management products (COM+BCM, VPFM, IPFM & EPM) follow the same common license generation, installation and management procedures. This section provides detailed steps for depositing a license, installing base licenses, upgrade licenses and administering licenses.

UCM Licenses are based on the PC/Server hardware Network Interface Card (NIC) MAC addresses.

To generate a UCM based product license, the MAC address of the PC/Server NIC must be obtained and provided to www.avayadatalicensing.com before a license file activating UCM based product can be generated. Once the license file has been obtained and installed on the UCM based product server, network nodes can be discovered and then managed by a UCM BASED PRODUCT.

The NIC MAC address of the PC/Server may be obtained by using the following procedure:

From the command prompt type ipconfig/all:

```
C:\>ipconfig /all
```

```
Windows IP Configuration

   Host Name . . . . . . . . . . . . : w3kserver-001
   Primary Dns Suffix  . . . . . . . : avaya.com
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No
   DNS Suffix Search List. . . . . . : avaya.com

Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . : avaya.com
   Description . . . . . . . . . . . : Intel(R) 82567LM Gigabit Network Connection
   Physical Address. . . . . . . . . : 00-27-13-66-1B-69
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   IPv4 Address. . . . . . . . . . . : 192.168.10.100(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : Tuesday, March 29, 2011 9:34:13 AM
   Lease Expires . . . . . . . . . . : Wednesday, April 06, 2011 11:35:55 AM
   Default Gateway . . . . . . . . . :
   DHCP Server . . . . . . . . . . . : 192.168.10.6
   DNS Servers . . . . . . . . . . . : 192.168.10.6
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

5.6.2 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download a UCM license file.

1 Access the *License Bank* page where the UCM License was deposited, select the UCM (COM, VPFM, IPFM or EPM) *License Authorization Code* then click *Generate License*:

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
Stingray COM Ent 2.2 Base 50	AH2735001-2.2	AH2735001-AKWP-ABTJ	U9Z2226WG FJSAFSK32	Zubair Ansari zansari@avaya.com	2011-03-28		1	0	1 Generate License

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

Switch MAC Address	Enter the base MAC address of the UCM product installation server that can be obtained using ***ipcnofig /all*** command.
Output License File Name	▪ Save the license file in a directory on the client machine where UCM application client browser is running.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.

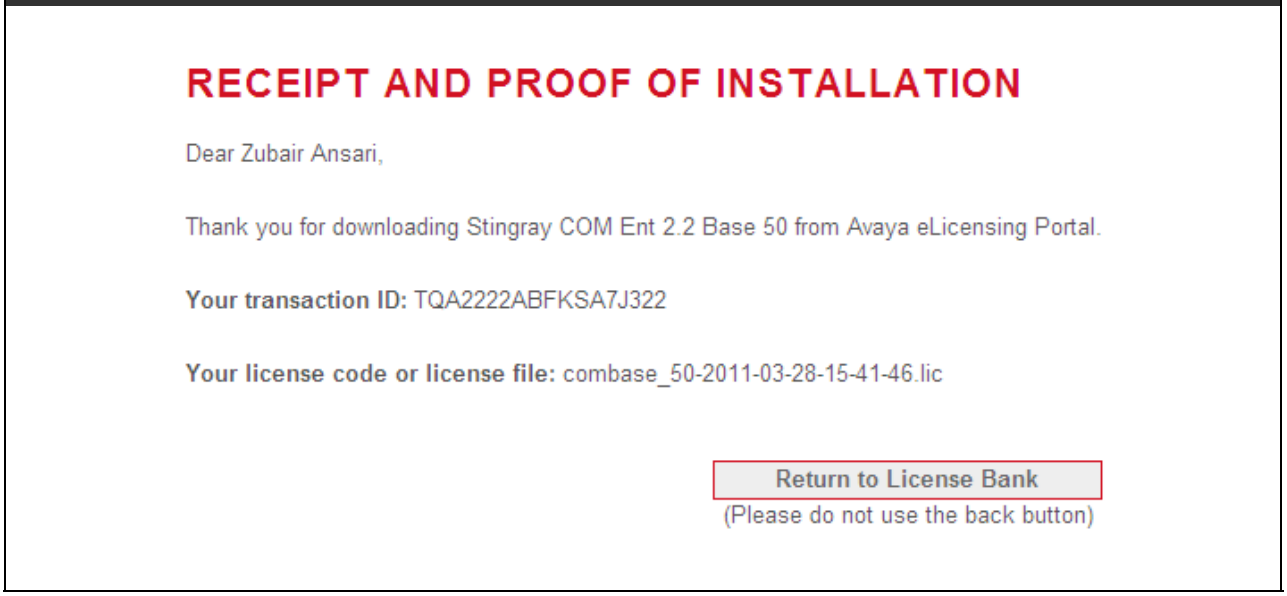
GENERATE LICENSE

MAC address of switch to install COM base: 00:1E:37:86:FD (XX:XX:XX:XX:XX:XX) How to find this

User Comment 1: COM base license User Comment 2:

Generate License

3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.



RECEIPT AND PROOF OF INSTALLATION

Dear Zubair Ansari,

Thank you for downloading Stingray COM Ent 2.2 Base 50 from Avaya eLicensing Portal.

Your transaction ID: TQA2222ABFKSA7J322

Your license code or license file: combase_50-2011-03-28-15-41-46.lic

Return to License Bank

(Please do not use the back button)

The UCM license file is an ASCII file. Please save the file in a directory where you can load this into the UCM product installation.

4 Return to the License Bank and select the corresponding LAC and transaction for the file generated if required.

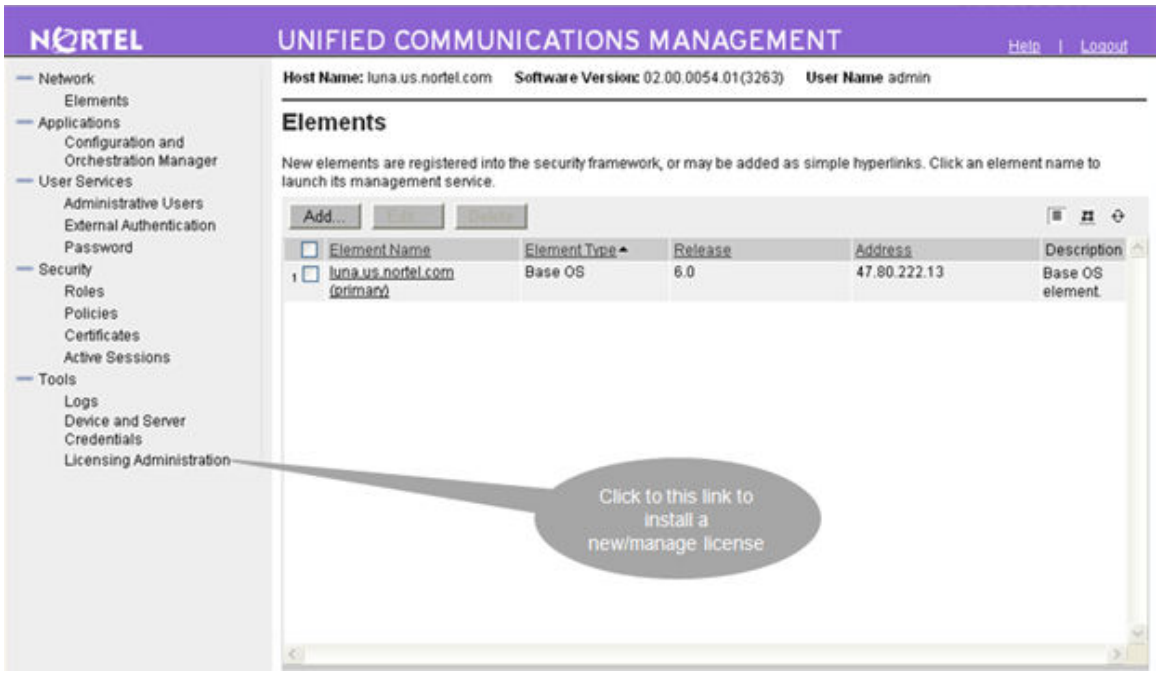
Product	Stingray COM Ent 2.2 Base 50
Order Code	AH2735001-2.2
License Authorization Code	AH2735001-AKWP-ABTJ
Transaction ID	TQA2222ABFKSA7J322-1
Licensee	Zubair Ansari
License Emailed To	zansari@avaya.com
License Generation Date	2011-03-28
License Type	LSM KCG
License or License File	combase_50-2011-03-28-15-41-46.lic
Licensed to	00:1e:37:86:fd:
Comment 1	COM base license
Comment 2	

5.6.3 License Installation

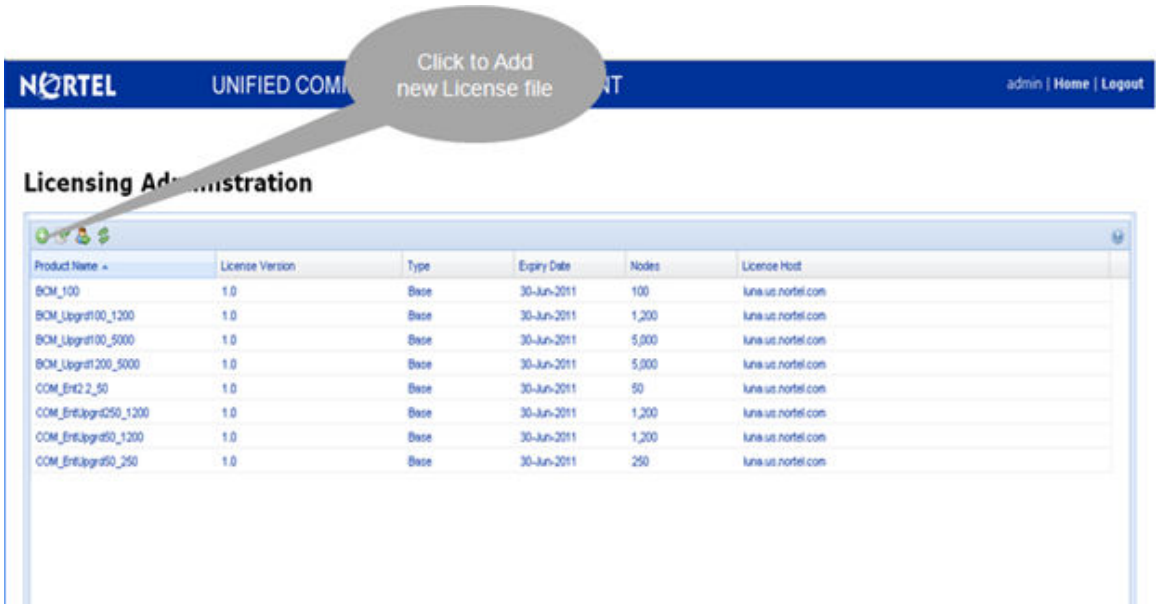
During the UCM based product Server startup/load sequence, a license file must be present. Licensed features will be unlocked and available for configuration when a valid license file is found.

5.6.3.1 Avaya Enterprise Device Manager (EDM)

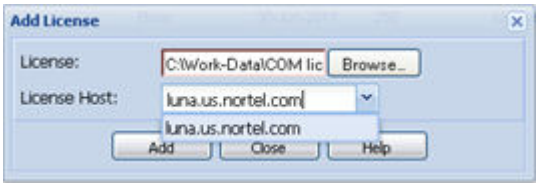
1 Login to the UCM web portal then select *Tools* > *Licensing Administration*:



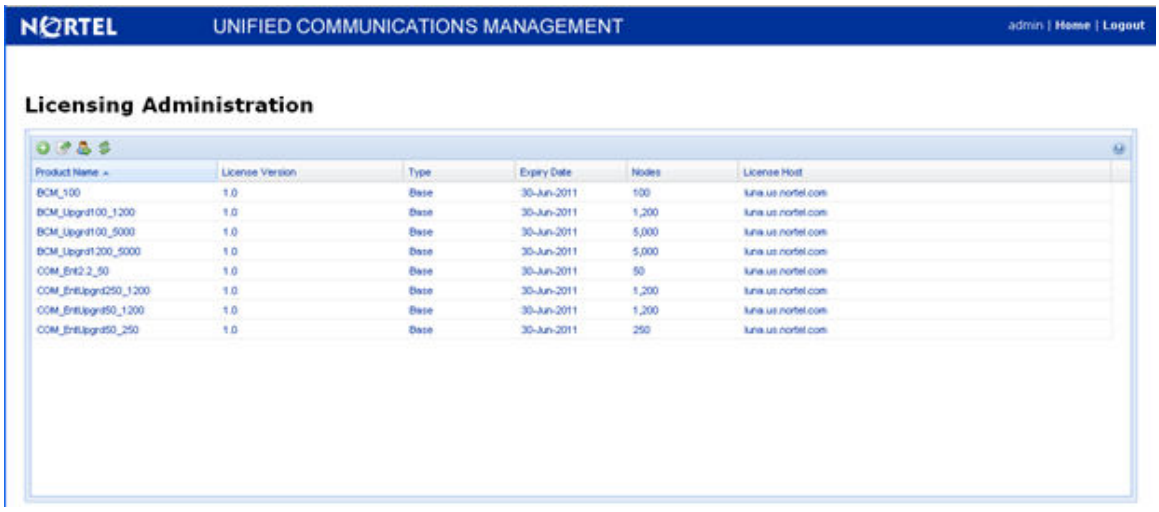
2	Within the Licensing Administration select + to add a license file:



3	Enter the file path location of the newly downloaded UCM License file, or select browse to locate the license file. Also provide the location of the UCM server where the product is installed. Finally, click “add” to add the license.



4	The newly installed license will be displayed in the *Licensing Administration* window.



Once the UCM license is added and visible in the License Administration window, licensed features are ready for immediate use.

5.6.3.2 Incremental license installation

To install incremental license upgrades, follow the same steps provided above for the base product license installation. NOTE: Incremental/upgrade licenses for a UCM product can only be installed if the base product license is installed.

5.6.3.3 Replacing or Moving a UCM License

The requirement to change or move the UCM license on a server can occur due to:

- A Network Interface Card (NIC) failure (new NIC will have a new MAC address)
- Moving UCM to a different Virtual Machine (resulting in a change of the V MAC for the VM)
- Server decommissioning requiring a move of the UCM license to a new platform

In these cases, contact Avaya Global Technical Support to arrange for a replacement UCM license.

5.6.4 UCM Trial Licenses

A trial Software Evaluation license for UCM based products is available at: www.avaya.com/ucmtrial. The evaluation license is active for 30 days from the day it is downloaded. A license file must be installed on the UCM based product server during this time.

If the trial period expires without a valid license installed, no devices can be managed or configured using UCM based products. A valid permanent license can be installed over the evaluation license without the need to reinstall a product.

5.6.5 UCM Software Release Subscription & Licensing

For customers that have a valid Avaya support contract that includes upgrade privileges as part of the support contract, such as Software Release Subscription (SRS), there is an automated process to obtain a new License Authorization Code (LAC) for release version upgrades.

To obtain and register a LAC, customers are required to have a valid COM Entitlement (Upgrade/Product Support) contract number. The contract number is obtained from the completed purchase order for the purchase of COM, and COM product support coverage including upgrade privileges over multiple software releases. Note that the UCM product and support can be purchased on different purchase orders and you may need to contact the partner/reseller for the support contract number if this information is not known. Refer to COM v3.0 release notes for detailed information on the LAC retrieval process.

1 Using a web browser, open the Avaya licensing portal *http://www.avayadatalicensing.com*, and click on "Contract LACs" from the main electronic licensing page.

2 In the My LAC page, enter your contract number. A valid support contract will return a list of valid LACs as shown below. Copy the appropriate LAC and enter this to deposit the license entitlement(s) into your License Bank (on the main electronic licensing page).

6. Wireless LAN

6.1 Wireless LAN 2300 Series

6.1.1 Wireless LAN 2300 Infrastructure

The Avaya WLAN 2300 Series is a complete 802.11 solution for enterprises wishing to deploy widespread wireless coverage for today's business, IP Telephony and converged multimedia applications. The solution combines the latest industry standards with a centralized architecture and advanced features to create a secure, cost-effective and highly scalable WLAN infrastructure.

The WLAN 2300 Series is comprised of a portfolio of WLAN Security Switches, Access Points and a Management Software system.

6.1.1.1 Base Licensing

A base license is included with the purchase of each Wireless LAN Security Switch 2300 and enables all core wireless features at no additional cost.

6.1.1.2 Access Point License

A Wireless LAN Security Switch can support a specific number of Active and Configured Access Points:

- Managed Access Points – Access Points that are actively connected to the Wireless LAN Security Switch and are servicing users.
- Configured Access Points – Access Points that have a configuration profile defined on the Wireless LAN Security Switch but are not connected or managed by the Wireless LAN Security Switch.

Access Point licenses for the Wireless LAN Security Switch 2350, 2360 & 2361 are fixed and no additional active Access Points may be supported. If additional Access Point capacity is required, additional Wireless LAN Security Switches must deployed.

Security Switch Model	Managed Access Points	Configured Access Points
2350	4	16
2360	12	48
2361	12	48
2380	40 → 120 (Increments of 40)	480
2382	32 → 128 (Increments of 32)	768
MX-2800	64 → 512 (Increments of 64 and 128)	4,096

Table 6.1.1.2-1 – Access Points per Wireless Security Switch

The Wireless LAN Security Switch 2380, 2382 and Trapeze Mobility Exchange 2800 Access Point licensing is upgradeable which allows customers to add additional Access Point capacity without having to add additional Wireless LAN Security Switches to the network.

A Wireless LAN Security Switch 2380 provides support for installing two 40 Access Point upgrade license keys which may be used to upgrade the active number of Access Point from 40 to 80 and 120 Access Points. Customers may install a single 40 Access Point license to upgrade the security switch to 80 Access Points or two 40 Access Point licenses to support 120 Access Points. Alternatively customers may upgrade directly to 120 Access Points by installing a single 80 Access Point license.

Table 6.1.1.2-2 provides the AP license upgrade order codes available for the Wireless LAN Security Switch 2380:

Order Code	Description
DR4011013-6.0	WLAN Security Switch 2380 - Software License for 40 AP Access Point Upgrade.
DR4011014-6.0	WLAN Security Switch 2380 - Software License for 80 AP Access Point Upgrade.

Table 6.1.1.2-2 – Wireless LAN Security Switch 2380 AP Licenses

The Wireless LAN Security Switch 2382 provides support for installing three 32 Access Point upgrade license keys which may be used to upgrade the active number of Access Point from 32 to 64, 96 and 128 Access Points.

Table 6.1.1.2-3 provides the AP license upgrade order code available for the Wireless LAN Security Switch 2382:

Order Code	Description
DR4011020-6.0.0	WLAN Security Switch 2382 - Software License for 32 AP Access Point Upgrade.

Table 6.1.1.2-3 – Wireless LAN Security Switch 2382 AP Licenses

The Trapeze Mobility Exchange 2800 provides support for 256 Access Points (release 7.0) and 512 Access Points (release 7.2 or above). Access Point upgrade license keys are available in 64 and 128 increments which may be used to upgrade the active number of Access Point from 64 to 256 Access Points (release 7.0 and 7.1) or 512 Access Points (release 7.2 and above).

Table 6.1.1.2-4 provides the AP license upgrade order codes available for the Trapeze Mobility Exchange 2800:

Order Code	Description
DR4011047	MX-2800 – Software License for 64 Access Point Upgrade.
DR4011048	MX-2800 – Software License for 128 Access Point Upgrade.

Table 6.1.1.2-4 – MX-2800 AP Licenses

6.1.1.3 Advanced Voice Module License

The Wireless LAN 2300 series Release 7.1 and above requires an Advanced Voice Module license to enable the following features:

- SIP Awareness
- Dynamic CAC
- Call Detail Records

One Advanced Voice Module license is required for each Wireless LAN 2300 Security Switch to enable advanced voice features.

Table 6.1.1.3 provides the Advanced Voice Module license upgrade order codes available for the Wireless LAN Security Switch 2350, 2360/61, 2382 and MX 2800:

Order Code	Description
DR4016003	Advanced Voice Module add-on software license for WLAN Security Switch 2350.
DR4016004	Advanced Voice Module add-on software license for WLAN Security Switch 2360/61.
DR4016005	Advanced Voice Module add-on software license for WLAN Security Switch 2382.
DR4016006	Advanced Voice Module add-on software license for MX-2800.

Table 6.1.1.3 – Voice Module Licenses

6.1.1.4 High Availability Module License

The Wireless LAN 2300 series Release 7.1 and above requires a High Availability Module license to enable the following features:

- Virtual Controller Cluster

One Advanced Voice Module license is required for each Wireless LAN 2300 Security Switch to enable high availability features.

Table 6.1.1.4 provides the Advanced Voice Module license upgrade order codes available for the Wireless LAN Security Switch 2350, 2360/61, 2382 and MX 2800:

Order Code	Description
DR4016007	High Availability Module add-on software license for WLAN Security Switch 2350
DR4016008	High Availability Module add-on software license for WLAN Security Switch 2360/2361.
DR4016009	High Availability Module add-on software license for WLAN Security Switch 2382.
DR4016010	High Availability Module add-on software license for MX-2800.

Table 6.1.1.4 – High Availability Licenses

6.1.1.5 Mesh / Bridging Module License

The Wireless LAN 2300 series Release 7.1 and above requires a Mesh / Bridging license to enable the following features:

- Wireless Mesh / Wireless Bridging

Mesh / Bridging licenses are available for 4, 12 and 32 Access Points and must be installed on each Wireless LAN 2300 Security Switch supporting Mesh / Bridging Access Points.

Table 6.1.1.5 provides the Mesh / Bridging Module license upgrade order codes available for the Wireless LAN Security Switch 2350, 2360/61, 2382 and MX 2800:

Order Code	Description
DR4016011	Mesh/Bridging Module add-on software license for 4 APs.
DR4016012	Mesh/Bridging Module add-on software license for 12 APs.
DR4016013	Mesh/Bridging Module add-on software license for 32 APs.

Table 6.1.1.5 – Mesh / Bridging Licenses

6.1.1.6 License Keying and Methodology

Access Point upgrade licenses are based on the serial number of the Wireless LAN Security Switch 2380/2382. To generate an Access Point upgrade license the serial number of the Wireless LAN Security Switch 2380/2382 must be obtained and provided to www.avaydatalicensing.com before a license activation key enabling the additional Access Points can be generated. Once the license activation key has been installed support for the additional Access Points will be enabled.

The serial number of a Wireless LAN Security Switch 2380/2382 may be obtained by CLI using the following procedure:

Using the CLI, issue the *show version* command:

```
WSS2380> show version
```

```
        Wireless Security Switch, Version: 6.0.4.6 REL
        Copyright (c) 2005 - 2010 (Avaya). All rights reserved.

Build Information: (build#0) REL_6_0_4_branch 2007-10-31 18:38:00
Model:             2380
Hardware
   Mainboard:      version 2 ; revision 02 ; FPGA version 5
Serial number      STP1W70OZW
Flash:             6.2.0.280  - md0a
Kernel:            3.0.0#686: Tue Oct 30 01:15:52 PDT 2007
BootLoader:        6.0 / 6.0.6
```

In the event that a Wireless LAN Security Switch 2380 / 2382 needs to be replaced, the AP licenses may be transferred to a difference serial number using the Avaya electronic licensing portal http://www.avayadatalicensing.com. Note however that the Access Point licenses cannot be transferred between different switch models.

6.1.1.7 License Acquisition

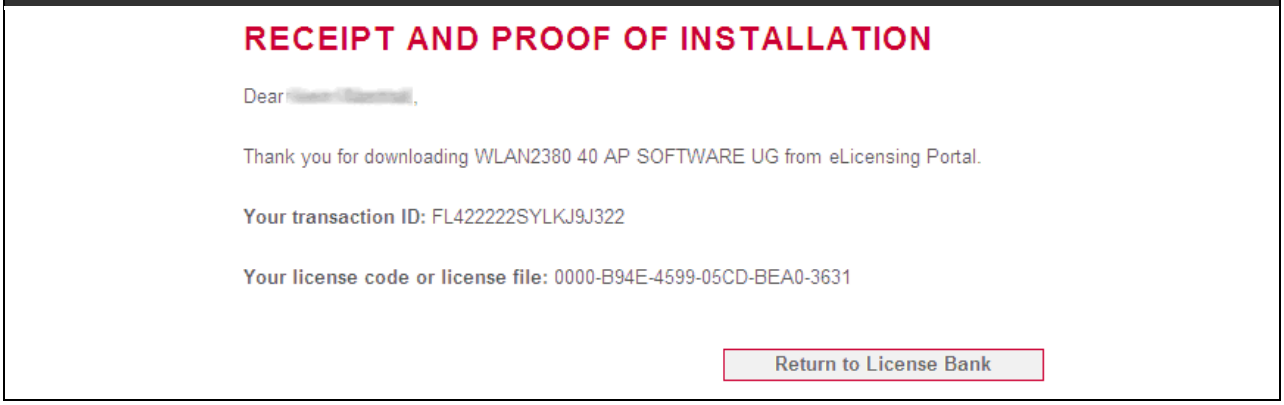
Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create the Access Point upgrade license file.

1 Access the *License Bank* page where the Access Point was deposited, then click *Generate License*:

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

Serial Number	Enter the serial number of the Wireless LAN Security Switch 2380 / 2382 obtained using ***show version*** CLI command.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.

3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.



RECEIPT AND PROOF OF INSTALLATION

Dear [redacted],

Thank you for downloading WLAN2380 40 AP SOFTWARE UG from eLicensing Portal.

Your transaction ID: FL422222SYLKJ9J322

Your license code or license file: 0000-B94E-4599-05CD-BEA0-3631

Return to License Bank

6.1.1.8 License Installation

An Access Point license may be installed using the command line interface by performing the following procedure:

1 Using CLI enable the privExec mode and issue the *set license* command and specify the license activation key as provided by the Avaya electronic licensing portal:

```
WSS2380# set license 0000-B94E-4599-05CD-BEA0-3631
```

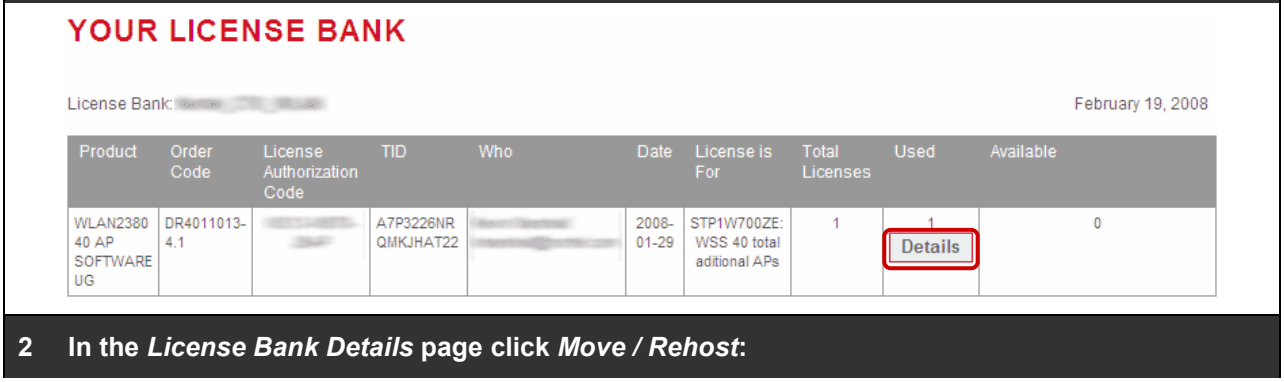
```
success: license accepted
```

Installed licenses may be viewed in the CLI by issuing the ***show license*** command.

6.1.1.9 Replacing a Switch

In the event of a Wireless LAN Security Switch failure, licenses may be transferred between like Wireless LAN Security Switches using the following procedure:

1 Access the *License Bank* page where the AP license was deposited. Locate the AP license to be transferred then click *Details*:

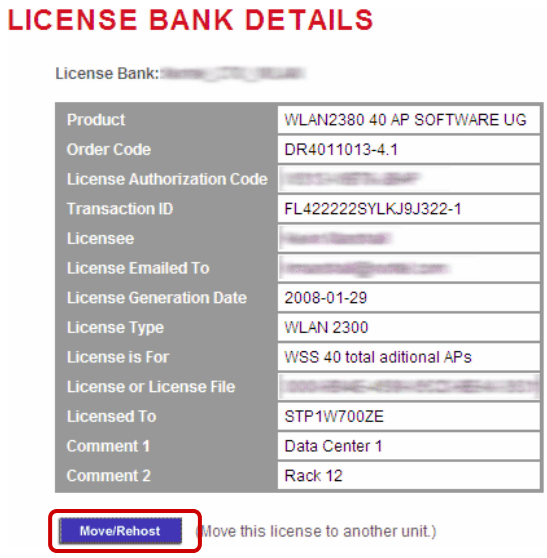


YOUR LICENSE BANK

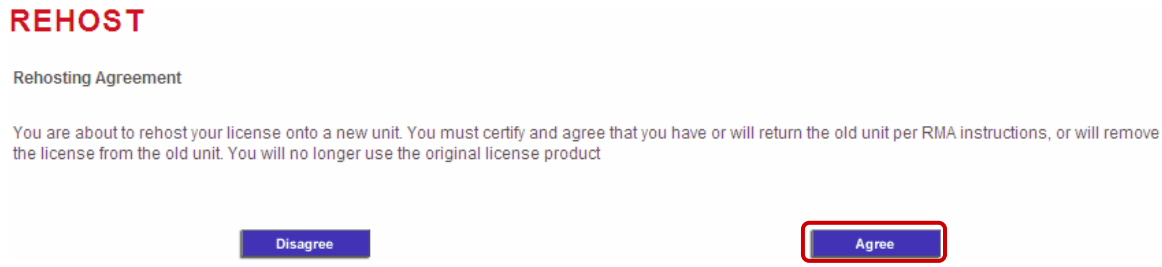
License Bank: [redacted] February 19, 2008

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
WLAN2380 40 AP SOFTWARE UG	DR4011013-4.1	[redacted]	A7P3226NR QMKJHAT22	[redacted]	2008-01-29	STP1W700ZE: WSS 40 total aditional APs	1	1 Details	0

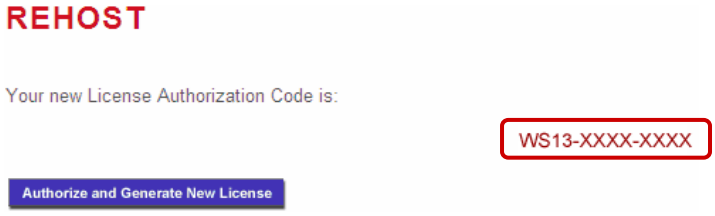
2 In the *License Bank Details* page click *Move / Rehost*:



3 Read the *Rehosting Agreement* then click *Agree*:


REHOST
Rehosting Agreement
You are about to rehost your license onto a new unit. You must certify and agree that you have or will return the old unit per RMA instructions, or will remove the license from the old unit. You will no longer use the original license product
Disagree
Agree

4 A new *License Authorization Code* will be generated and must be added to a new or existing *License Bank* before a License *Activation Key* for the new Wireless LAN Security Switch can be created.



Avaya will not maintain a record of the new License Authorization Code. If the License Authorization Code is lost before being deposited into a License Bank, a proof of purchase will be required by Avaya support to reissue a License Authorization Key.

AP Software Upgrade license may only be transferred between switches of the same model. Licenses cannot be transferred between dissimilar switches such as from a Wireless LAN Security Switch 2380 to a Wireless LAN Security Switch 2382 or vice versa.

6.1.2 Wireless LAN 2300 Management

The Avaya Wireless LAN Management Software 2300 system is a comprehensive design and management tool for the Wireless LAN 2300 Series Security Switches and Access Points that identifies ideal access point locations on detailed floor plans, configures all devices with a single click and provides granular monitoring and reporting for complete visibility and control over the entire system.

6.1.2.1 Base Licensing

Wireless LAN Management Software 2300 base software is licensed to support a specific number of Access Points (APs) and is available in 50, 250 and 1,000 AP versions. The Wireless LAN 2300 Management Software base license provides core management capabilities that allow enterprises to perform the following functions:

- Create and manage network plans
- Manage WSS images and configurations
- Detect and combat rogues
- Monitor alarms, events and generate reports
- Import and edit floor plans and manually place APs
  - Create a site, building or floor
  - Edit a site, building or floor
  - Import a floor diagram
  - Create coverage areas
  - Manually place AP's on a floor in a coverage area
- Perform rough rogue AP and user location (greater accuracy requires planning license)

6.1.2.2 Access Point Upgrade License

The Wireless LAN Management 2300 Software AP license may be upgraded as the enterprises AP count increases. An enterprise may start by installing Wireless LAN Management Software with support for 50 APs and as needed upgrade the base license to support 250 or 1,000 APs.

Table 6.1.2.2 provides the AP upgrade license order codes available for the Wireless LAN Management 2300 Software:

Order Code	Description
DR4011016-6.0	WLAN Management Software – A 50 to 250 Access Point Upgrade (Need to purchase DR4010001).
DR4011017-6.0	WLAN Management Software – A 50 to 2000 Access Point Upgrade (Need to purchase DR4010001).

Table 6.1.2.2 – Wireless LAN Management 2300 AP Upgrade License Order Codes

6.1.2.3 Planning License

The Wireless LAN 2300 Management Software planning license is optional and when purchased enables additional functions in Wireless LAN 2300 Management Software that allow enterprises to perform RF modeling, predictive planning and more accurate Rogue AP and user location. When purchased the planning license enables the following functions:

- Create RF obstacles in floor plans to build an RF model of the floor.
- Perform automated RF planning (Compute & Place APs, Assign Channels, and Optimize TX Power).
- Import data from Ekahau Site Survey to optimize the RF model of a floor.
- Perform accurate location of devices on a floor plan.

Table 6.1.2.3 provides the license order codes available for the Wireless LAN 2300 Management Software planning tool:

Order Code	Description
DR4011015-6.0	WLAN Management Software – Planning Tool

Table 6.1.2.3 – Wireless LAN 2300 Management Planning Tool License Order Codes

The planning license cannot operate in a stand-alone mode and requires that the base 50/250/1000 AP Wireless LAN 2300 Management Software be purchased first.

6.1.2.4 License Keying and Methodology

Wireless LAN Management 2300 Software AP upgrade and planning licenses are tied to the hostname of the Windows or Linux host where the Wireless LAN Management 2300 Software services are installed. The hostname and license key will need to be provided to www.avayadatalicensing.com to generate a license activation key which will determine which features are licensed on the host.

The hostname of a Windows based system can be determined by using the following procedure:

At a command prompt issue the *ipconfig /all* command:

```
C:\> ipconfig /all
```

```
Windows IP Configuration

        Host Name . . . . . . . . . . . . : w3kserver-wms
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . : avayalabs.com
```

The hostname of a Linux based system can be determined by using the following procedure:

At the console issue the *hostname* command:

```
[root@wmsserver root]# hostname
wms.avayalabs.com
```

For Linux and Windows based systems, if the DNS suffix is defined it will also need to be provided to www.avayadataicensing.com or the license will not install. If no DNS suffix is defined, only the hostname needs to be provided.

6.1.2.5 License Acquisition

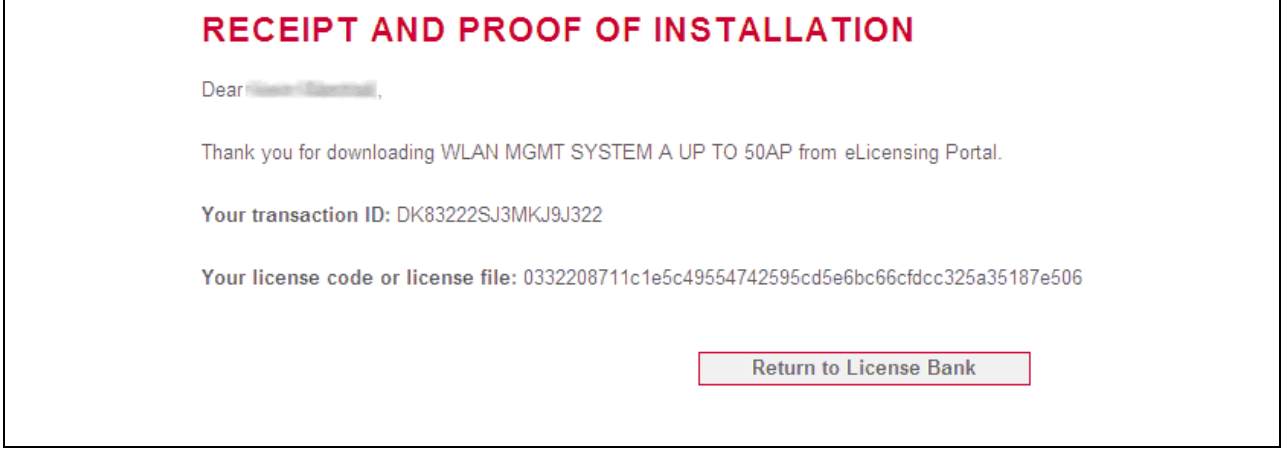
Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create the Access Point upgrade license file.

1 Access the *License Bank* page where the Access Point license was deposited, then click *Generate License*:

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

PC Host Name	Enter the host name of the Windows or Linux host where the WMS service has been installed. Note that the hostname is case sensitive.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.

3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.



RECEIPT AND PROOF OF INSTALLATION

Dear [redacted],

Thank you for downloading WLAN MGMT SYSTEM A UP TO 50AP from eLicensing Portal.

Your transaction ID: DK83222SJ3MKJ9J322

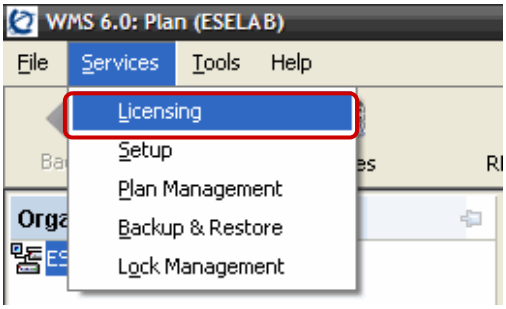
Your license code or license file: 0332208711c1e5c49554742595cd5e6bc66cfdcc325a35187e506

Return to License Bank

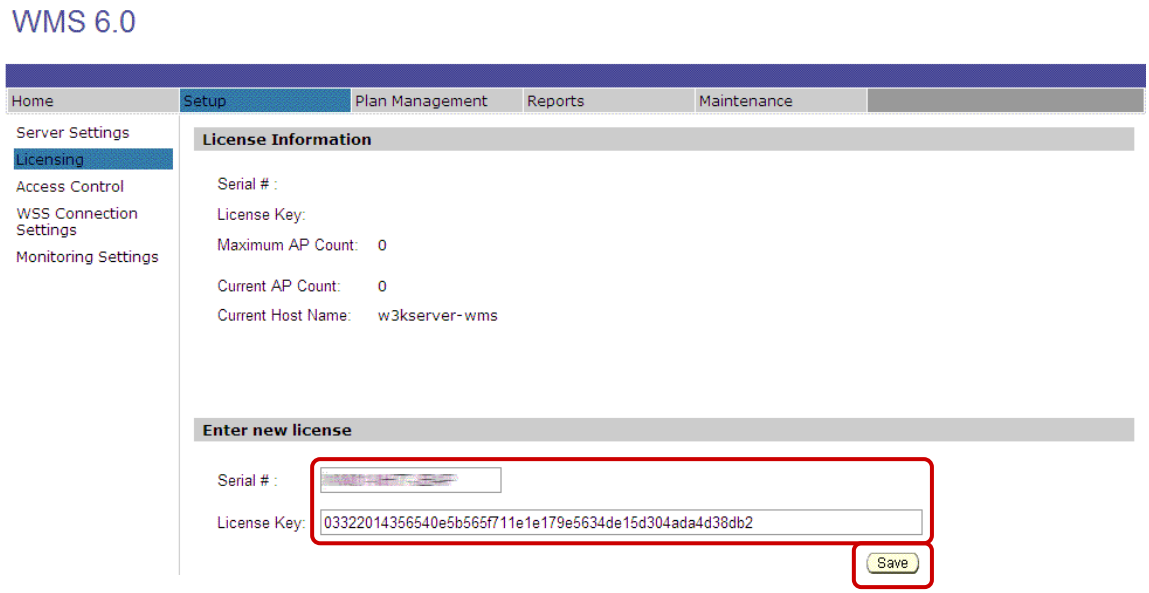
6.1.2.6 License Installation

An Access Point license may be installed using the command line interface by performing the following procedure:

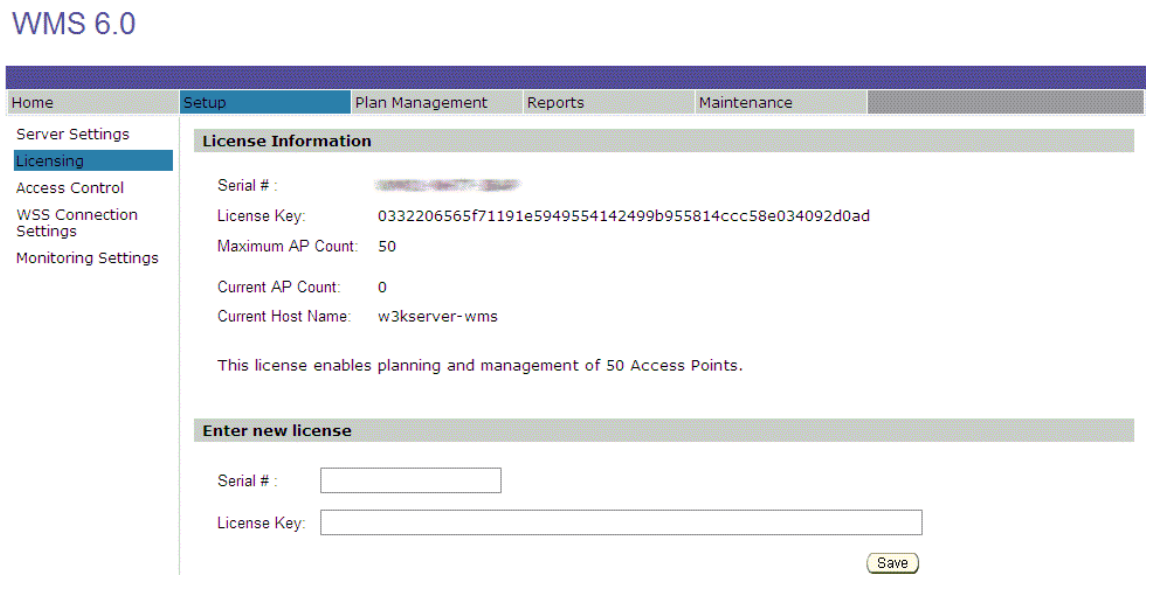
1 Access the Wireless LAN Management Software services licensing configuration page by clicking *Services* then *Licensing* in the Wireless LAN 2300 Management Software client.



2 In the *Serial #* field enter the *License Authorization Code* provided with the Software License Certificate. In the *License Key* field enter the *License Activation Code* generated by the http://www.avayadatalicensing.com electronic licensing portal. Click *Save*:



3 The License Information configuration page will now display the number of APs that WMS is licensed to support as well as if planning is enabled.



6.1.2.7 Replacing a Server

In the event of a server failure or hardware upgrade a Wireless Management Software license may be transferred to another server with a different hostname using the following procedure:

1. Customers with a valid service contract should contact Global Avaya Technical Support and explain the situation and open a new trouble ticket.
2. The case will be escalated to Global Avaya Product Support and the customer will be contacted to verify proof-of-purchase.
3. Global Avaya Product Support will issue a replacement license key.

6.2 Wireless LAN 8100 Series

6.2.1 Wireless LAN 8100 Infrastructure

The Avaya WLAN 8100 Series combines the latest 802.11n wireless standard with a new and truly unified wireless/wired architecture that delivers wired performance to wireless users at a lower total cost of ownership.

The WLAN 8100 Series architecture incorporates an innovative design that allocates separate resources to management, control, and data forwarding, and enables network intelligence to be optionally distributed to the wireless edge. By combining the operational advantages of centralized management and intelligence with the scalability, efficiency and performance of distributed switching, the optimized wireless controller/switch architecture is able to deliver an optimized WLAN switching system.

6.2.1.1 Base Licensing

A base license is included with the purchase of each Wireless Controller 8180 / 8180-16L that enables all core wireless features at no additional cost. The Wireless Controller 8180-16L includes a base license that supports 16 Access Points while the Wireless Controller 8180 includes a base license that supports 64 Access Points.

Wireless Controller 8180 Model	Base Access Point License	Max Access Point Licenses
8180-16L	16	16
8180	48	256[1]

[1] The initial offering supports up to 256 Access Points with support for 512 and above Access Points in a future software release.

Table 6.2.1.1 – Wireless Controller 8180 Base Licenses

6.2.1.2 Access Point License

The Wireless Controller 8180-16L and 8180-16L Access Point licensing is upgradeable which allows customers to add additional Access Point capacity without having to add additional Wireless Controllers to the network. Avaya offers Access Point licenses in increments of 64 and 128 allowing the Wireless Controller 8180 to be upgraded to support 128, 192 or 256 Access Points.

The Wireless Controller 8180-16L is offered for small and branch office deployments supporting a maximum of 16 Access Points. If additional Access Point capacity is required, the Wireless Controller 8180-16L can be unlocked with an optional license to converts the Wireless Controller 8180-16L to a standard Wireless Controller 8180. Once upgraded the Wireless Controller 8180 will include a base license of 64 Access Points which can be upgraded to support 128, 192 or 256 Access Points.

Table 6.2.1.2 provides the AP license upgrade order codes available for the Wireless Controller 8180 and 8180-16L:

Order Code	Description
WL81ULK64	Key to unlock WC-8180-16L to a standard WC-8180 with 64 Access Point Licenses.
WL81LC064	64 Access Point Upgrade License for WC-8180.
WL81LC128	128 Access Point Upgrade License for WC-8180.

Table 6.2.1.2 – Wireless Controller 8180 Access Point License Kits

When Wireless Controllers are clustered in a mobility domain, the Access Point licenses are pooled and shared between all the Wireless Controllers in the mobility domain. This licensing model allows customers to provide hardware redundancy without having to purchase duplicate Access Point licenses.

It's important to note that while Access Point licenses can be pooled within a mobility domain, a Wireless Controller cannot manage more Access Points than its hardware capacity allows. A Wireless Controller 8180-16L can only manage a maximum of 16 Access Points while a Wireless Controller 8180 can only manage a maximum of 256 Access Points (512 in the future).

Access Point licenses are shared between all the Wireless Controllers within the mobility domain even during a Wireless Controller failure. If a Wireless Controller in the mobility domain fails or is taken out of service, the Access Point licenses from the failed / removed Wireless Controller will remain available within the mobility domain for a grace period of up to 30 days. This provides an adequate time period that allows a removed controller to be put back into service or a failed controller to be replaced.

6.2.1.3 License Keying and Methodology

Access Point licenses are required for each Wireless Controller 8180-16L or 8180 deployed as standalone controllers or as a cluster within a mobility domain.

To generate a base Access Point license or incremental Access Point upgrade license, the MAC address of the Wireless Controller 8180-16L or 8180 must be obtained and provided to http://www.avayadatalicensing.com before a license file activating the base Access Point license or incremental Access Point license upgrade can be generated.

A base license certificate is included with the purchase of each Wireless Controller 8180-16L and 8180 which can be deposited into a license bank on the electronic licensing site. If incremental upgrade Access Point licenses are purchased for the Wireless Controller 8180, they are amended to the existing base Access Point license based on the MAC address of the Wireless Controller 8180 up to the maximum allowed license count.

The MAC address of a Wireless Controller 8180-16L or 8180 may be obtained by ACLI using the following procedure:

Using ACLI, issue the *show sys-info* command:

```
WC8180# show sys-info
```

```
Operation Mode:         Switch
MAC Address:            00-1B-4F-CA-19-00
Reset Count:            4
Last Reset Type:        Power Cycle
```

6.2.1.4 License Acquisition

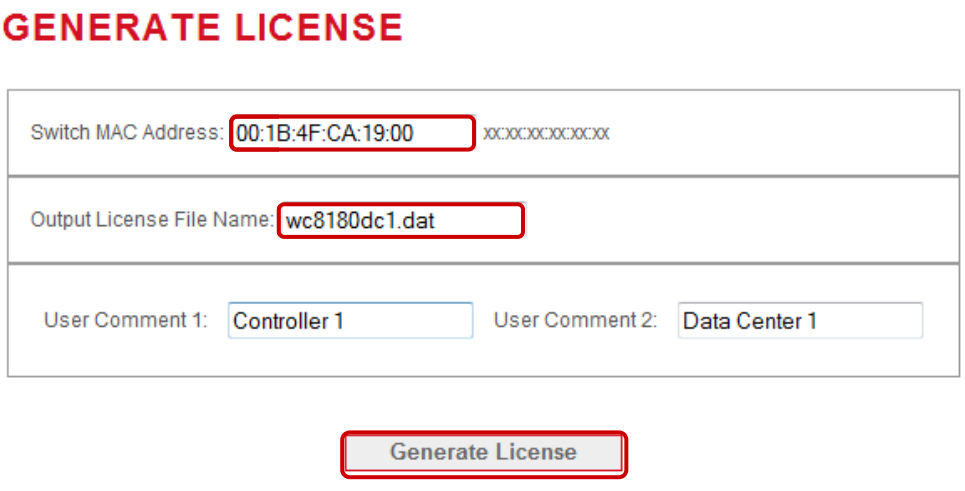
Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create and download a base Access Point license or incremental Access Point upgrade license file.

1 Access the *License Bank* page where the *Base Access Point* or *Incremental Access Point Upgrade* license was deposited, select the *License Authorization Code* then click *Generate License*:

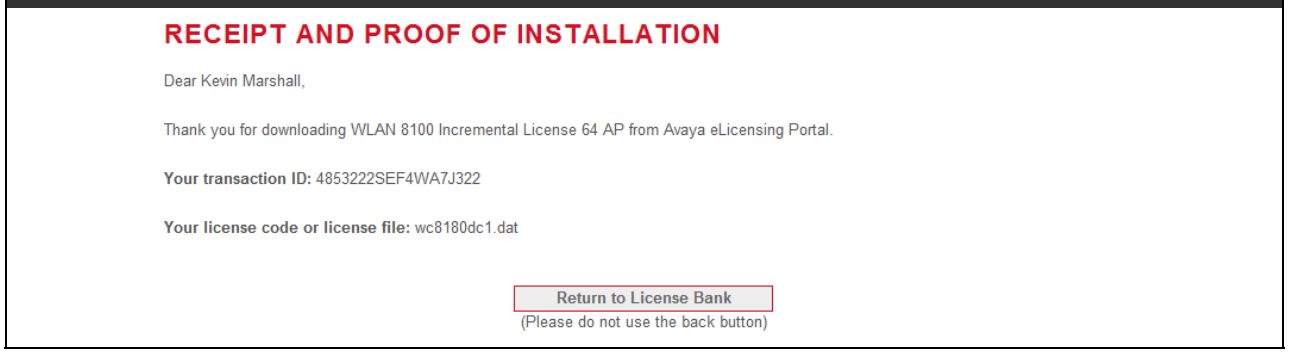
Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
WLAN 8100 Incremental License 64 AP	WL81LC064	[redacted]	Q9T222663 P3WAFSJ52	[redacted]	2011-03-07		1	0	1 Generate License
WLAN 8100 Base License 64 AP	325723-A	[redacted]	T8Q322664 75WAFSJ52	[redacted]	2011-03-07		1	0	1 Generate License

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

Switch MAC Address	Enter the MAC address of the Ethernet Routing Switch 4500 obtained using the show sys-info command.
Output License File Name	The name of the license file that will be emailed when the license is generated. ▪ Maximum of 63 alphanumeric characters (lower case). ▪ No spaces or special characters allowed. ▪ An underscore "_" is permitted. ▪ A period followed by a three letter extension is required.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.



3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.



RECEIPT AND PROOF OF INSTALLATION

Dear Kevin Marshall,

Thank you for downloading WLAN 8100 Incremental License 64 AP from Avaya eLicensing Portal.

Your transaction ID: 4853222SEF4WA7J322

Your license code or license file: wc8180dc1.dat

Return to License Bank

(Please do not use the back button)

The license file is a compressed binary file. It is important that when downloading or saving this file, that your browser does not automatically decompress this file or you will receive an error when adding the license to the switch.

6.2.1.5 License Installation

A license file may be installed using the command line interface or Enterprise Device Manager by performing one of the following procedures:

6.2.1.5.1 Avaya Command Line Interface (ACLI)

1 Using ACLI enable the privExec mode and issue the *copy tftp license <tftp-server-ip> <license-file>* command where *tftp-server-ip* is the IP address of the TFTP server and *license-file* is the name of the license file:

```
WC8180# copy tftp license 192.168.40.100 wc8180dc1.dat
```

After the Access Point license file has been successfully installed, a Wireless Controller reset will be required for the Access Point licenses to take effect.

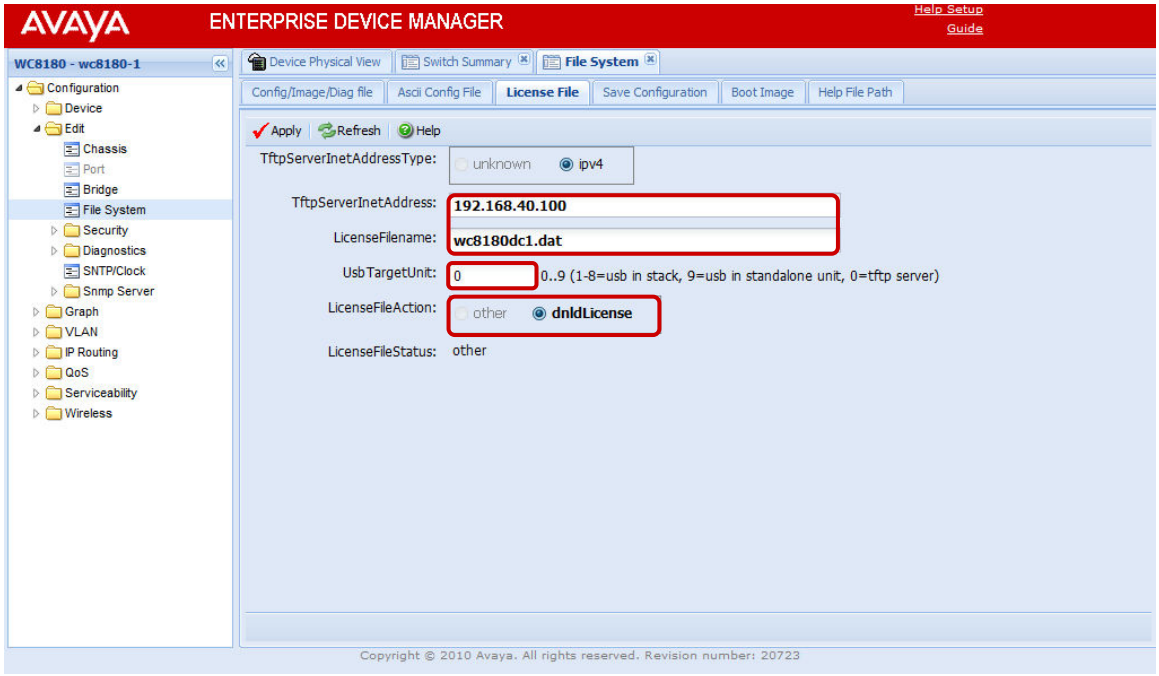
Installed licenses may be viewed in the ACLI by issuing the ***show wireless controller license-info*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

If the license file is put onto a USB mass storage device, use the ***copy usb license filename <filename>*** command to install the license.

6.2.1.5.2 Avaya Enterprise Device Manager (EDM)

1 In EDM select *Edit* then *File System*. Select the *License File* tab and in the *TftpServerInetAddress* field enter the IP address of the TFTP server where the license file is located. In the *LicenseFilename* field enter the name and extension of the license file. In the *UsbTargetUnit* field enter *0 (default)* to select TFTP server. Select *dnldLicense* then click *Apply*:



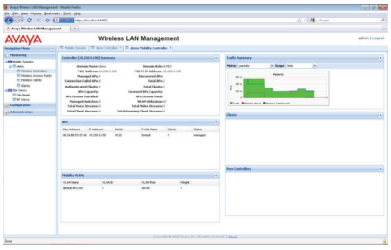
Installed licenses may be viewed in the ACLI by issuing the ***show wireless controller license-info*** command.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

6.2.1.6 Replacing a Wireless Controller

In the event of a Wireless Controller 8180-16L or 8180 failure, licenses may be transferred by contacting Global Avaya Support Services (GSS) and initiating a RMA. The RMA process will initiate a license authorization code reset for the failed device which allows the new license keys to be generated and issued from the Avaya electronic licensing portal for the replacement 8180-16L or 8180 Wireless Controller.

6.2.2 Wireless LAN 8100 Management



Avaya's WLAN Management Software 8100 system is a full-featured tool suite that enables administrators to perform configuration, verification, management, and optimization of the Wireless LAN 8100 series infrastructure. The Wireless LAN 8100 series is a complete enterprise grade Wireless LAN solution, which combines the latest industry 802.11n standard with a new truly-unified wired/wireless architecture. The Wireless LAN 8100 series enables enterprises to achieve new levels of workforce productivity, operational efficiency, and reliability that are needed in the emerging Unwired Enterprise era.

The WLAN Management Software 8100 system is fully integrated into Avaya's Unified Communications Management (UCM) solution, enabling common management across wired and wireless networks.

6.2.2.1 Base Licensing

Wireless LAN Management Software 8100 base software is licensed to support a specific number of Access Points (APs) and includes based support for 64 APs and is upgradable in 64, 128 or 256 increments to support up to 2,000 APs.

The Wireless LAN Management Software 8100 base license provides core management capabilities that allow enterprises to perform the following functions:

- Planning and Design
  - Import existing floor plans in AutoCAD DXF™, JPEG or GIF formats
  - Assign RF attenuation characteristics for doors, pillars, walls, ceilings, and other physical obstructions
  - Generate a detailed RF map showing calculated RF coverage on floor plan
  - Offers enhanced RF pattern accuracy through importation of RF data and maps from Ekahau™ site survey tool
- Configuration
  - Calculates WLAN topology, and configurations including power level and channel settings
  - Provides system-wide configuration and updates in a single-step
  - Alerts administrators of conflicting change requests
  - Delivers full fault and event management capabilities
- Monitoring and Reporting
  - Instructs access points to perform scheduled, on-demand or continuous RF sweeps
  - Detects and maps location of coverage holes, rogue APs, and users
  - Verifies RF mapping and coverage zones
  - Tracks user location, bandwidth rate, and usage statistics
  - Enables export of all system statistics in tables and graphs

6.2.2.2 Access Point Upgrade License

The Wireless LAN Management 8100 Software AP license may be upgraded as the enterprises AP count increases. An enterprise may start by installing Wireless LAN Management Software with support for 64 APs and as needed upgrade the base license to support a maximum of 2,000 APs.

Table 6.2.2.2 provides the AP upgrade license order codes available for the Wireless LAN Management 8100 Software:

Order Code	Description
WL81MG064	WLAN Management Software – 64 Access Point Upgrade (Need to purchase WL81MG000-x.x).
WL81MG128	WLAN Management Software – 128 Access Point Upgrade (Need to purchase WL81MG000-x.x).
WL81MG256	WLAN Management Software – 256Access Point Upgrade (Need to purchase WL81MG000-x.x).

Table 6.2.2.2 – Wireless LAN Management 8100 AP Upgrade License Order Codes

6.2.2.3 License Keying and Methodology

Wireless LAN Management 8100 Software base and AP upgrade licenses are tied to the MAC address of the Windows host where the Wireless LAN Management 8100 Software services are installed. The MAC address and license key will need to be provided to www.avayadatalicensing.com to generate a license activation key which will determine how many Access Points are licensed on the host.

The MAC of a Windows based system can be determined by using the following procedure:

At a command prompt issue the *ipconfig /all* command:

```
C:\> ipconfig /all
```

```
Windows IP Configuration

   Host Name . . . . . . . . . . . . : w3kserver-wms
   Primary Dns Suffix  . . . . . . . : avayalabs.local
   Node Type . . . . . . . . . . . . : Unknown
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No
   DNS Suffix Search List. . . . . . : avayalabs.local

Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Intel(R) PRO/1000 MT Network Connection
   Physical Address. . . . . . . . . : 00-0C-29-9C-AA-83
..
```

6.2.2.4 License Acquisition

Please reference Section 7 for details on using the Avaya electronic licensing portal to create a license bank. Once the license bank has been created, the following steps are required to create the Access Point upgrade license file.

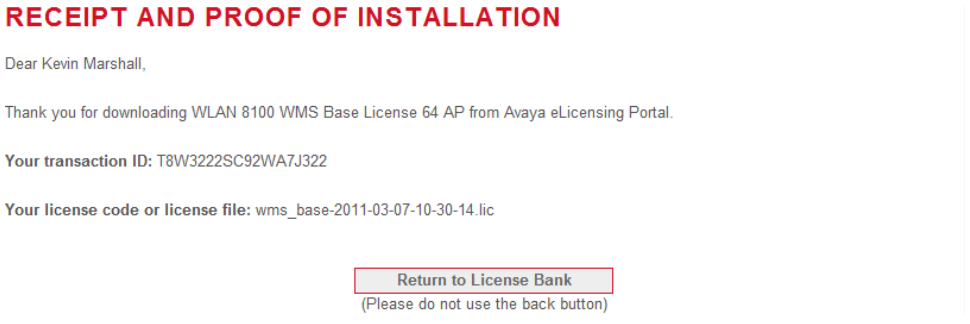
1 Access the *License Bank* page where the *Base Access Point* or *Incremental Access Point Upgrade* license was deposited, select the *License Authorization Code* then click *Generate License*:

Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
WLAN 8100 WMS Base License 64 AP	WL81MG000-1.0	[redacted]	R822226EA V2WAFSJ52	[redacted]	2011-03-07		1	0	1 Generate License

2 In the *Generate License* page enter the required information to generate the license and then click *Generate License*:

MAC Address	Enter the MAC address of the Windows host where the WMS service has been installed.
User Comment Fields	Free form text fields that allow additional information to be entered to provide for asset tracking.

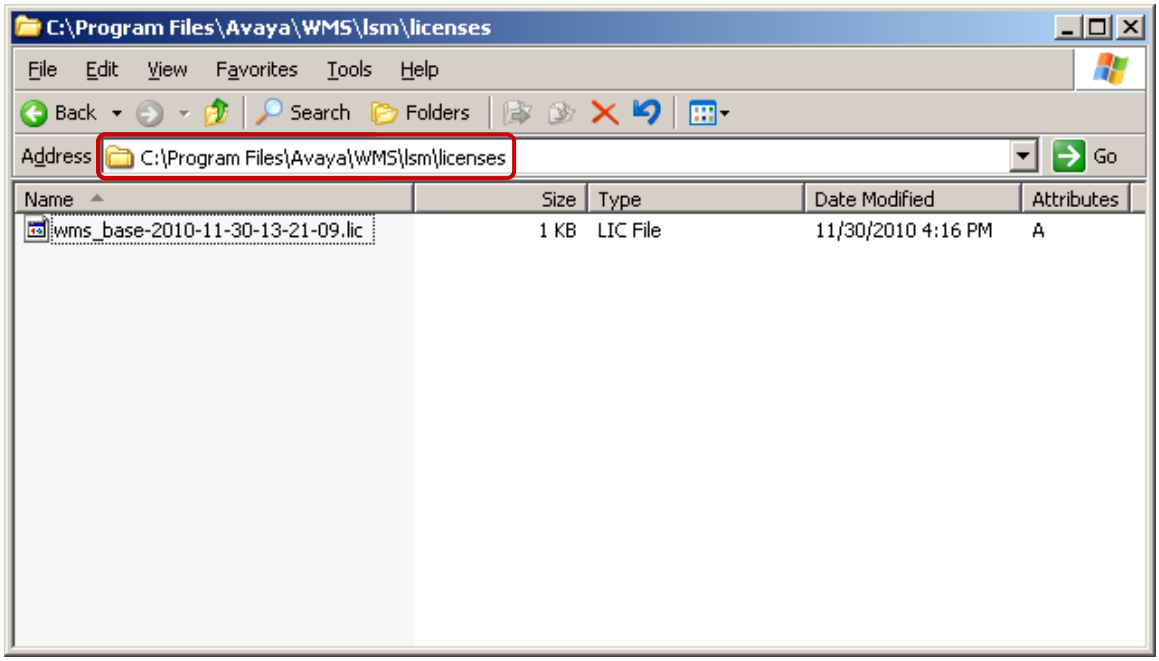
3 A *Receipt* and *Proof of Installation* page will be displayed confirming the license file generation. The license file and confirmation will be sent via email.


RECEIPT AND PROOF OF INSTALLATION
Dear Kevin Marshall,
Thank you for downloading WLAN 8100 WMS Base License 64 AP from Avaya eLicensing Portal.
Your transaction ID: T8W3222SC92WA7J322
Your license code or license file: wms_base-2011-03-07-10-30-14.lic
Return to License Bank
(Please do not use the back button)

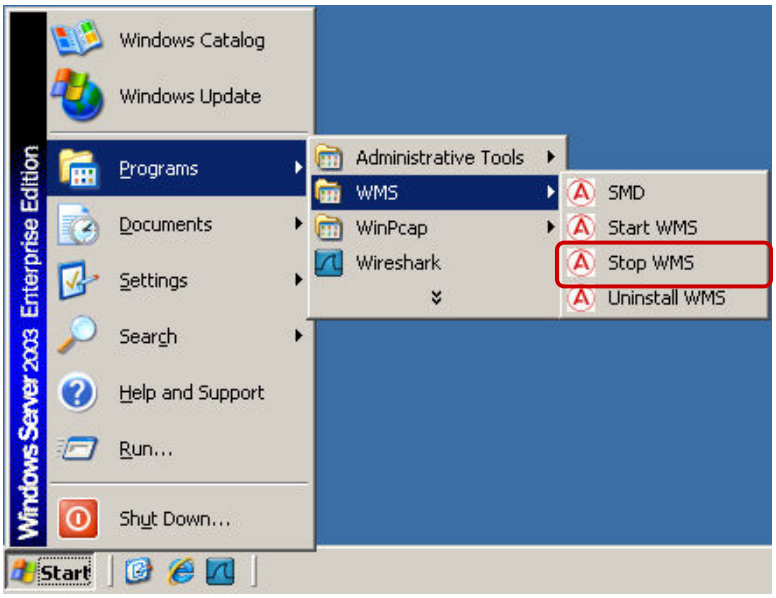
6.2.2.5 License Installation

A license file may be installed on the Wireless Management System 8100 using the following procedure:

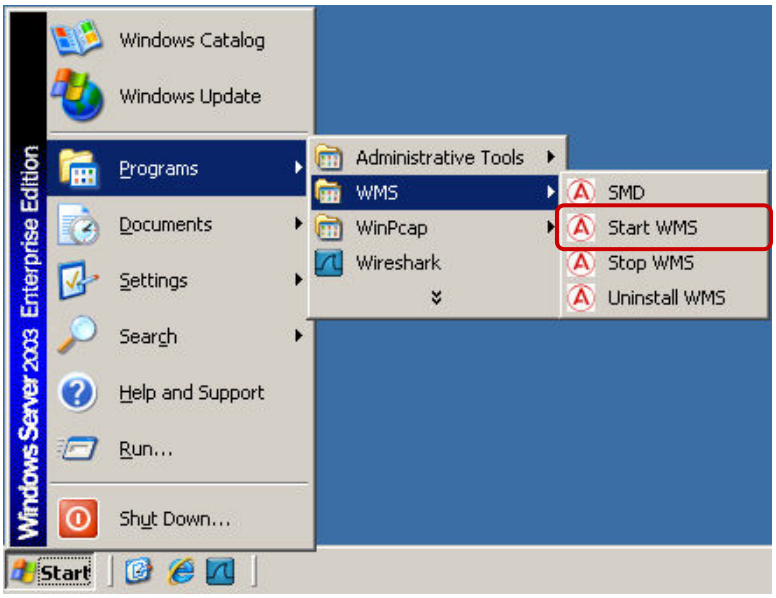
1 Place the license file into the *<drive>\<installation path> lsm\licenses* directory on the windows host where the WMS services resides:


C:\Program Files\Avaya\WMS\lsm\licenses
File Edit View Favorites Tools Help
Back Search Folders
Address C:\Program Files\Avaya\WMS\lsm\licenses
Go
Name Size Type Date Modified Attributes
wms_base-2010-11-30-13-21-09.lic 1 KB LIC File 11/30/2010 4:16 PM A

2 Stop the WMS services by selecting *Start* > *Programs* > *WMS* > *Stop WMS*:



3 Start the WMS services by selecting *Start* > *Programs* > *WMS* > *Stop WMS*:



By default WMS is installed in the ***C:\Program Files\Avaya\WNS\lsm\licenses*** directory.

The WMS services must be restarted for the Access Point licenses to take effect.

To minimize download and loss of data, Avaya recommends that the system reboot be scheduled during a normal maintenance window.

7. Licensing Portal

The Avaya data products licensing portal works on the concept of a license bank which is an electronic repository for all license entitlements and license files. End users deposit license entitlements into a license bank by entering a License Authorization Code (LAC).

End users may deposit multiple license entitlements into a single license bank or utilize multiple license banks each with its own login. Consider carefully how you wish to organize and control access to your licenses.

The official Web URL for Avaya Networking data eLicensing Portal is: www.avayadatalicensing.com.

Licenses should be purchased using the least number of kits for a specific license type that is required. This will increase flexibility and minimize administrative overhead on the portal.

Examples:

a) A customer requires Advanced licenses for 60x ERS5000 series switches/stack stacks. Order the following:
   - 1x AL1016003 (50 switch Advanced License Kit – ERS5000)
   - 1x AL1016002 (10 switch Advanced License Kit – ERS5000)

b) A customer requires Stacking licenses for 103x ERS2500 series switches/stack stacks. Order the following:
   - 1x AL2515004 (100 switch Stacking License Kit – ERS2500)
   - 3x AL2515001 (1 switch Stacking License Kit – ERS2500)

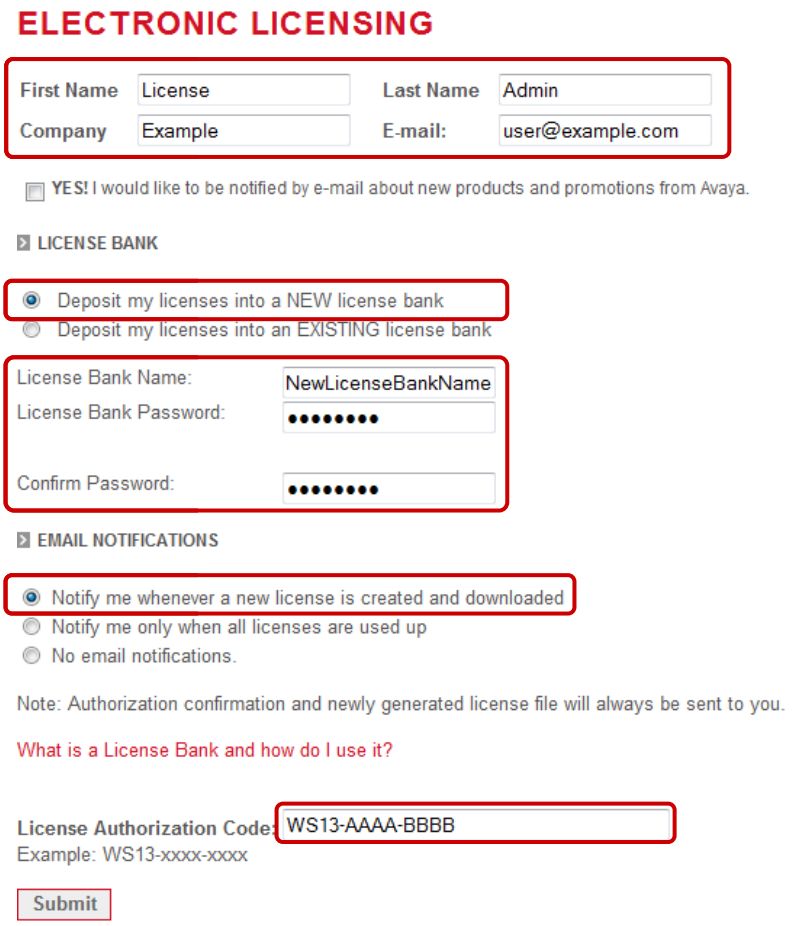
For administrative issues such as lost/forgotten License Bank names or username/email changes, please contact Global Avaya Technical Support and open a trouble ticket.

7.1 Creating a New License Bank

A new license bank may be created using the following procedure:

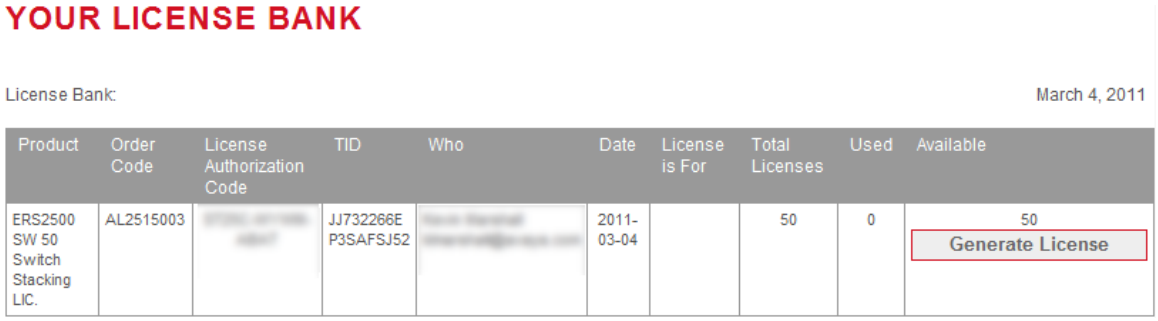
1 Using a web browser open the Avaya electronic licensing portal *http://www.avayadatalicensing.com*.

2 The following screen shows the initial information required to create a new license bank. One the Electronic Licensing page, select the option to *Deposit my licenses into a NEW license bank*. Enter the required information and then click *Submit*.


ELECTRONIC LICENSING
First Name
License
Last Name
Admin
Company
Example
E-mail:
user@example.com
YES! I would like to be notified by e-mail about new products and promotions from Avaya.
LICENSE BANK
Deposit my licenses into a NEW license bank
Deposit my licenses into an EXISTING license bank
License Bank Name:
NewLicenseBankName
License Bank Password:
Confirm Password:
EMAIL NOTIFICATIONS
Notify me whenever a new license is created and downloaded
Notify me only when all licenses are used up
No email notifications.
Note: Authorization confirmation and newly generated license file will always be sent to you.
What is a License Bank and how do I use it?
License Authorization Code:
WS13-AAAA-BBBB
Example: WS13-xxxx-xxxx
Submit

First Name	End users first name.
Last Name	End users last name.
Company	Company name.
E-mail Address	The email address used for confirmations.
License Bank Name	The name of the new license bank you wish to create.
License Bank Password	The password for the new license bank you wish to create.
Email Notifications	Must select one option.
License Authorization Code	The initial license entitlement required to create the new license bank listed on the license certificate.

3 Once the license bank has been created and the license entitlement deposited, end users may download the license file or exit the portal and use download a license at a later date.



YOUR LICENSE BANK

License Bank: March 4, 2011

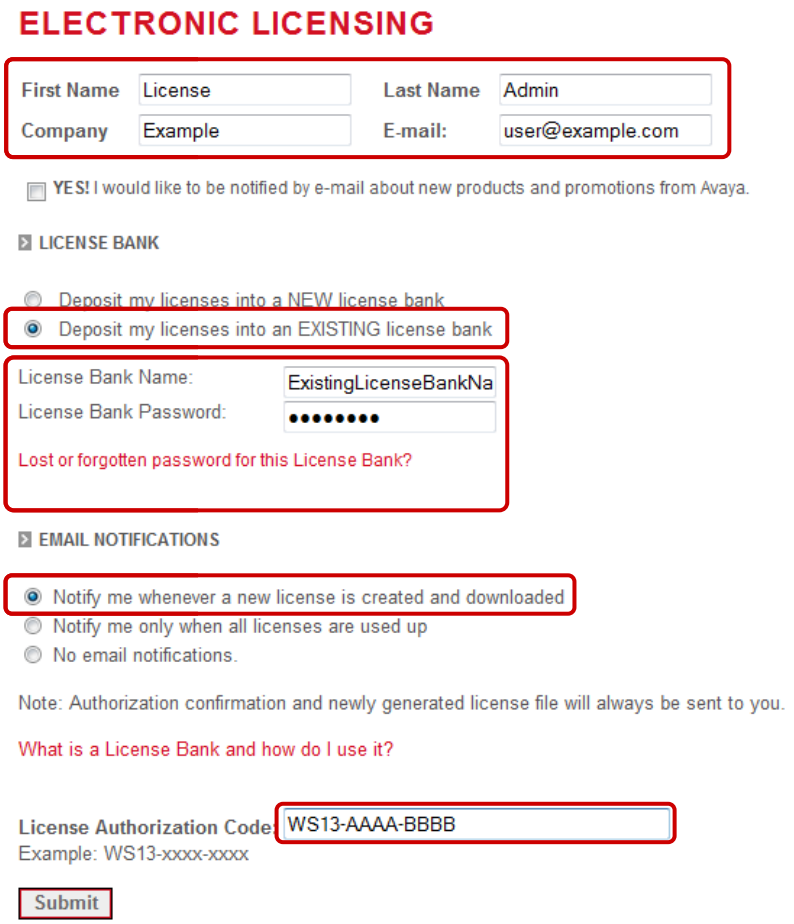
Product	Order Code	License Authorization Code	TID	Who	Date	License is For	Total Licenses	Used	Available
ERS2500 SW 50 Switch Stacking LIC.	AL2515003	[redacted]	JJ732266E P3SAFSJ52	[redacted]	2011-03-04		50	0	50 Generate License

7.2 Depositing a License to an Existing License Bank

Once an initial license bank has been created, end users may deposit additional license entitlements using the following procedure:

1 Using a web browser open the Avaya electronic licensing portal *http://www.avayadatalicensing.com*.

2 The following screen shows the initial information required to add a new license entitlement to an existing license bank. One the Electronic Licensing page, select the option to *Deposit my licenses into an EXISTING license bank*. Enter the required information and then click *Submit*.


ELECTRONIC LICENSING
First Name
License
Last Name
Admin
Company
Example
E-mail:
user@example.com
YES! I would like to be notified by e-mail about new products and promotions from Avaya.
LICENSE BANK
Deposit my licenses into a NEW license bank
Deposit my licenses into an EXISTING license bank
License Bank Name:
ExistingLicenseBankNa
License Bank Password:
Lost or forgotten password for this License Bank?
EMAIL NOTIFICATIONS
Notify me whenever a new license is created and downloaded
Notify me only when all licenses are used up
No email notifications.
Note: Authorization confirmation and newly generated license file will always be sent to you.
What is a License Bank and how do I use it?
License Authorization Code:
WS13-AAAA-BBBB
Example: WS13-xxxx-xxxx
Submit

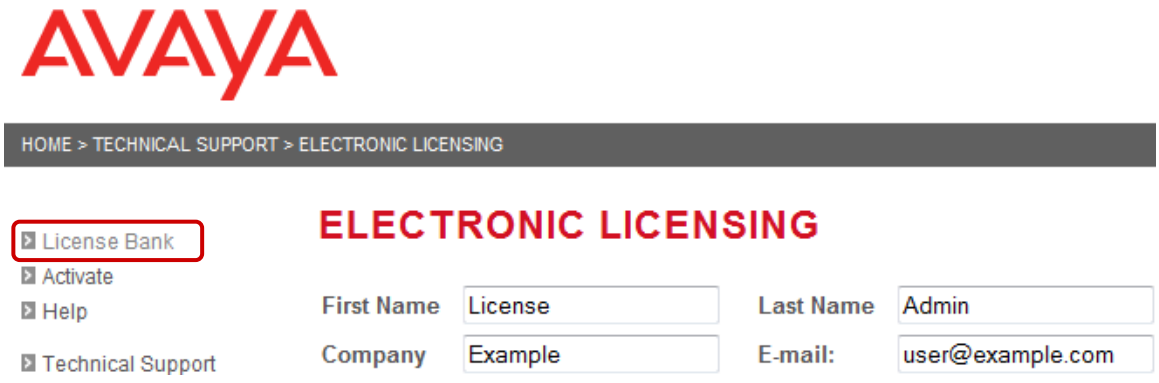
First Name	End users first name.
Last Name	End users last name.
Company	Company name.
E-mail Address	The email address used for confirmations.
License Bank Name	The name of the new license bank you wish to access.
License Bank Password	The password for the new license bank you wish to access.
Email Notifications	Must select one option.
License Authorization Code	The license entitlement you wish to deposit into an existing license bank listed on the license certificate.

7.3 Accessing an Existing License Bank

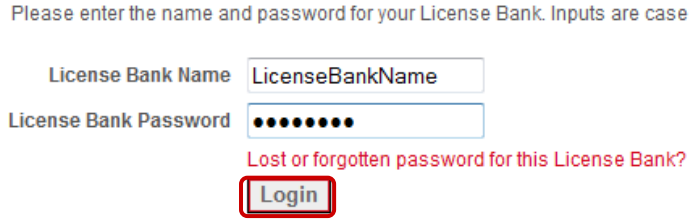
End users can access an existing license bank to download or view details on licenses using the following procedure:

1 Using a web browser open the Avaya electronic licensing portal *http://www.avayadatalicensing.com*.

2 On the main Electronic Licensing page click *License Bank* on the left menu.



3 Enter the existing License Bank Name and License Bank Password then click *Login*.

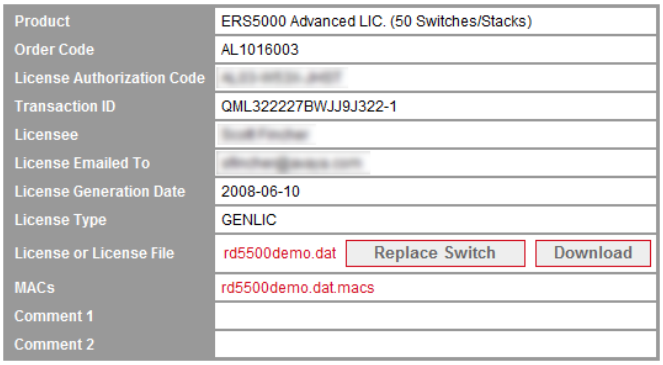

Please enter the name and password for your License Bank. Inputs are case sensitive.
License Bank Name
LicenseBankName
License Bank Password
Lost or forgotten password for this License Bank?
Login

4 The license bank screen will display all the licenses that have been deposited into the license bank and provides the following information

Product	The product that the license authorisation code applies to.
Order Code	The order code for the license authorisation code.
License Authorisation Code	The license authorisation code deposted into the license bank.
Who	The name and email addresss of the end user who deposted the license authorisation code into the license bank.
TID	The name and email addresss of the end user who deposted the license authorisation code into the license bank.
Date	The date that the license authorisation code was deposted.
Total Licenses	The total number of licenses entitled for each license authorisation code.
Used	The total number of used licenses for each license authorisation code.

5 The following screen shows the details for a license file within a license authorization code (LAC). The Details screen allows end users to display transaction information about the license file such as when the license was generated, the License filename and which device(s) are contained within the license file.

Each transaction box also provides the option to replace a device MAC address within a license file by selecting *Replace Switch* and also provides the option to re-download the license file directly by selecting *Download*.



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